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Ткаченко А.А. Туберкулез – направления познания и решение проблемы / **А.А. Ткаченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 6–14.

Приведены результаты многолетней работы по изучению биологических свойств одного высоковирулентного быстрорастущего штамма *M. bovis*. Установлено, что микобактерии активно изменяются по пассажам (240 переводов) через искусственную питательную среду без содержания индуцирующих факторов, приобретая несвойственные для них признаки и возможность размножаться при температуре 3 °С. Выяснено, что, пройдя ряд стадий, последняя морфологическая форма биологического цикла развития – элементарные тельца – генерирует кислотостойкие палочковидные варианты возбудителя туберкулеза. Полученные данные являются основанием для пересмотра некоторых положений инструктивно-нормативных документов, что будет способствовать повышению эффективности мер профилактики и искоренению туберкулеза животных.

Ключевые слова: *M. bovis*, питательные среды, диссоциация, биологические свойства, ферментативная активность, корд-фактор, вирулентность, липиды, биологический цикл развития.

Кручиненко О.В. Биохимические и иммунологические показатели крови коров при фасциозе и дикроцелиозе / **О.В. Кручиненко, А.С. Клименко, С.Н. Михайлютенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 15–19.

Проведенными исследованиями установлены изменения некоторых биохимических и иммунологических показателей крови у крупного рогатого скота при паразитировании *F. hepatica* и *D. lanceatum*. Выяснено, что паразитирование фасциол приводит к снижению уровня общего белка в среднем на 5,5 %, повышает содержание АЛТ на 8,74 %, билирубина на 20,6 % и холестерина – на 25,5 %. При дикроцелиозе происходит достоверное повышение АЛТ на 7,6 % ($P < 0,05$) и холестерина на 23,4 % ($P < 0,01$). Гельминты при хроническом течении заболевания негативно влияют на показатели иммунной системы организма больных животных, что проявляется снижением уровня Ig M при фасциозе на 10,0 % и дикроцелиозе – на 7,7 %.

Ключевые слова: крупный рогатый скот, гельминты, паразитирование, иммуноглобулины, *F. hepatica*, *D. lanceatum*.

Микробиологическая оценка качества сухих заквасок, реализуемых в торговой сети горо-

да Днепр / **М.В. Билан, В.В. Глебенюк, Т.В. Кучук, С.Д. Кузин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 20–24.

Приведены результаты исследования сухих заквасок, используемых для производства йогурта. Установлена высокая активность закваски “VIVO” (однородной консистенции плотный сгусток с чистым нежным приятным сочным вкусом и выраженным ароматом); средняя активность – закваски “GENESIS” (наполовину плотный сгусток, нечистый кисло-молочный вкус и средний аромат) и низкая – закваски “GOODFOOD” (несформированный сгусток, вязущая водно-слизистой консистенции масса, сладковата на вкус с умеренным ароматом). По органолептическим показателям запах и вкус образовавшихся сгустков всех трех заквасок были характерными для данного продукта – йогурта. Немолочные бактерии в аэробных условиях обнаружены при изучении закваски “GOODFOOD”, в анаэробных условиях – в закваске “GENESIS”, которая характеризовалась еще и клетками дрожжевидных грибов. Поплавки, помещенные в пробирки, оставались на дне, что указывает на отсутствие бактерий группы кишечной палочки в заквасках.

Ключевые слова: йогурт, закваски, органолептические показатели, микробиологическая оценка, активность, кислотность, немолочные бактерии.

Ковалева И.В. Динамика изменений продуктивных качеств кур под влиянием селена и фитодобавок / **И.В. Ковалева, П.П. Антоненко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 25–28.

Представлены результаты изучения добавок “Фитопанк”, “Фитохол” и селенита натрия к рациону курей-несушек в период интенсивной яйцекладки и по её завершении. Установлено повышение яичной продуктивности на 9,3–9,9 % и увеличение массы яиц на 1,9–2,49 %. За время применения исследуемых препаратов (6 мес.) от кур опытных групп, сравнительно с контрольной, дополнительно получено от 12,7 до 13,5 яйца. Зарегистрировано возрастание массы желтков на 2,7–7,4 % и яичной скорлупы на 5,4–7,8 %. Предзабойная масса кур-несушек повысилась на 8,0–8,9 %, возросла доля тушек 1-ой категории и сократилось соответственно их количество категории нестандартной.

Ключевые слова: куры-несушки, качество тушек птицы, морфологический состав яиц, селенит натрия, “Фитопанк”, “Фитохол”.

Милостивый Р.В. Связь между удоем коров и их ростом в онтогенезе при разной продол-

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жительности молочного периода / **Р.В. Миловский, Н.М. Надрага, Г.К. Новокшенова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 29–35.

Приведены экспериментальные данные о связи между молочной продуктивностью коров голштинской породы и их энергией роста в онтогенезе в зависимости от продолжительности молочного периода. Установлено, что при интенсивном росте положительная связь между его энергией и пожизненной продуктивностью животных наблюдается уже в ранние периоды развития ($r = 0,17-0,34$; $R^2 = 2,9-14,5 \%$). При низких приростах о величине пожизненного удоя коров можно судить лишь на поздних стадиях онтогенеза ($r = 0,71-0,98$; $R^2 = 1,4-96,3 \%$). В условиях промышленной технологии производства молока обнаружена положительная связь ($r = 0,33-0,39$) между пожизненной продуктивностью и скоростью спада роста в онтогенезе.

Ключевые слова: коровы, голштинская порода, молочная продуктивность, энергия роста, корреляция.

Козак Н.И. Культуральные, тинкториальные свойства и морфология *M. bovis* различных морфологических форм при длительном хранении и низких плюсовых температурах / **Н.И. Козак** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 36–41.

Установлено, что микобактерии, которые хранили на питательной среде в течение 9–12 лет, проявляют свою жизнеспособность и при пересеве на свежую питательную среду способны образовывать субкультуры. Выявлено, что такая способность на 28 % выше у культур, которые сохраняли на среде с pH 6,5. Выявлено также способность микобактерий субкультур быстрорастущего штамма *M. bovis* расти при температуре 3 °C, чего раньше не наблюдалось. При этом у одной субкультуры наблюдался рост только при 37 °C, у трех – при 3 °C, шесть субкультур выросли при обеих температурах культивирования, а пять – роста не проявили ни при каком температурном режиме, что может свидетельствовать о потере способности размножаться после длительного хранения при 3 °C. Зафиксировано существенные различия морфологических форм микобактерий исходных культур и их субкультур. Первые формировались различными морфологическими вариантами, как правило, неокислостойчивыми палочками, зернами, нитевидными и L-формами, вторые – большим количеством неокислостойчивых вариантов, нитевидных и L-форм. Некоторые субкультуры оказались пигментообразующими и способными

изменять характер поверхности преимущественно на гладкую (S-форма). Присутствующая значительная вариация в полученных результатах, вероятно, может быть обусловлена тем, что микобактерии исследуемых культур хранили на среде с различным значением pH, что и определяло разный метаболизм и биологическую активность.

Ключевые слова: микобактерии, морфология, кислотостойчивость, характер поверхности, пигмент.

Коломак И.О. Распространение и лечение паразитозов голубей в условиях г. Полтава / **И.О. Коломак** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 42–46.

Дикие голуби, популяция которых растет в городах, инвазируют птицу частных хозяйств, распространяя таким образом инвазию по городу. Изучение продвижения паразитарных инвазий позволит предупредить заражение декоративных голубей, а поиск новых схем лечения создаст условия для проведения лечебных мероприятий с максимальной терапевтической эффективностью. Установлено, что на территории частной голубятни г. Полтава у декоративных голубей паразитируют гельминты *Heterakis* spp. и *Capillaria* spp. и пухоеды *Columbicola columbae*, *Campanulotes compar*, *Bonomiella columbae*, *Nohorstiella lata* Piaget. Определено, что при паразитировании *Columbicola columbae* и *Bonomiella columbae* экстенсивность инвазии составляет 100,0 %. Выявлено, что *Heterakis* spp. поражено 76,3 % декоративных голубей, а *Capillaria* spp. – 69,1 %. При ассоциированном течении *Heterakis* spp. и *Capillaria* spp. терапевтическая эффективность Бровадазола плюс и Бровалевамаизола 8%-ного составляет 100,0 %. Подтверждена высокая эффективность эктосана пудры на третьи сутки после его применения (EE = 80,0 % и IE = 96,1 %).

Ключевые слова: гельминты, малофаги, паразитирование, распространенность, эффективность препаратов.

Алексеева Н.В. Нодулярный дерматит – проблема современной ветеринарной медицины / **Н.В. Алексеева** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 47–52.

Освещены вопросы происхождения и распространения заразного узелкового дерматита в странах мира. Вспышки заразного узелкового дерматита приводят к значительным экономическим убыткам в животноводческих хозяйствах, которые занимаются разведением крупного рогатого скота, вследствие гибели животных или санитарного убоя, потери продуктивности, поврежденной кожи, аборт,

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бесплодия, ограничений на передвижение скота и торговлю. На основании современных сведений о болезни установлена степень опасности нодулярного дерматита для животноводства Украины. Рассмотрены мероприятия, которые проводятся для недопущения заноса возбудителя заболевания на территорию государства, методы диагностики, современные средства для мониторинговых исследований и существующие средства специфической профилактики.

Ключевые слова: lumpy skin disease, векторы-переносчики, клинические признаки, патологоанатомические изменения, профилактические мероприятия, гетерологичные и гомологичные вакцины, биологические риски.

Влияние дезинфицирующих средств на криогенные штаммы микроорганизмов / **В.В. Захарский, Т.И. Фотина, А.В. Березовский, П.А. Давыденко, О.Н. Кулишенко, В.А. Чумак, А.А. Крывая, И.В. Боровик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 53–58.

Определено, что исследуемые препараты “Альдовет ФФ” и “Альдовет Супер плюс” в концентрациях 1; 5; 10 и 25 % обладают бактерицидными свойствами по отношению к криогенным штаммам микроорганизмов: *Staf. aureus* ATCC № 25923, *S. typhimurium* 144, *E. coli* (F 50) ATCC № 25922, *List. monocytogenes* ATCC № 19112, *Prot. vulgaris* HX 19 № 222, *Serratia marcescens* 1, *Ps. aeruginosa* ATCC № 2853 (F), *Enterococcus faecalis* ATCC № 19433 и *Yersinia enterocolitica*. На микроорганизмы *Vac. cereus* ATCC № 10702 препараты влияли бактериостатически: обнаружен рост колоний на среде с добавлением 1%-ного раствора “Альдовет ФФ” и 1-; 5- и 10%-ного растворов “Альдовет Супер плюс”. Ведущая роль в обеспечении стабильного ветеринарного благополучия животноводства и охраны здоровья населения отведена эффективным дезинфекционным мероприятиям. Для дезинфицирующих препаратов использованы лабораторные анализы, проведенные по методикам биотестирования, в частности с использованием *Paramecium caudatum*, *Tetrahymena pyriformis*. Максимальная токсичность при использовании препаратов на *Paramecium caudatum* обнаружена в “Альдовет ФФ” и “ФАГ”, менее токсичный – “ДЗПТ-2” (в 14–15 раз безопаснее). “Альдовет супер плюс” имеет промежуточное значение токсичности. Токсичность для *Tetrahymena pyriformis* – самая низкая у “ДЗПТ-2” и “ФАГ”, высокая токсичность у “Альдовет Супер плюс”.
Ключевые слова: дезинфектант, бактерицидное действие, токсичность, *Paramecium caudatum*, *Tetrahymena pyriformis*.

Милостивый Р.В. Влияние иммунобиологического статуса организма телят на продуктивное долголетие / **Р.В. Милостивый** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 59–64.

Полученные результаты подтверждают существование связи между показателями неспецифической резистентности организма телят и будущей продуктивности коров. Выявлена достоверная положительная связь между бактерицидной активностью сыворотки крови телят и пожизненным удоем, выходом молочного жира и белка ($r = 0,63-0,69$; $P < 0,05$). Менее тесной была корреляция между продуктивными качествами и лизоцимной активностью сыворотки крови ($r = 0,57-0,59$; $P < 0,05$), а также содержанием Ig G и Ig M ($r = 0,58-0,63$; $P < 0,05$). В то же время связь между показателями пожизненной продуктивности и фагоцитарной активностью нейтрофилов оказалась положительной ($r = 0,31-0,41$), однако была недостоверной. Расчетные данные свидетельствуют о возможности использования иммунобиологических показателей крови телят в качестве маркеров будущей продуктивности коров.

Ключевые слова: телята, корова, голштинская порода, показатели крови, пожизненный удой, корреляция.

Глебенюк В.В. Контроль благополучия по туберкулезу крупного рогатого скота по результатам патологоанатомических и микробиологического исследований / **В.В. Глебенюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 65–68.

Показано, что послеубойный осмотр туш и внутренних органов животных позволяет контролировать эпизоотическую ситуацию на благополучных по туберкулезу территориях. Для исследований служил биологический материал (кусочки легких, бронхиальные лимфатические узлы) с неопределенным по туберкулезу характером патологоанатомических изменений, который отобрали специалисты ветеринарной медицины одного из районов Днепрпетровской области на частном убойном пункте. Во время микроскопического и бактериологического исследований биоматериала получен отрицательный результат. Лабораторные животные были эвтаназированы по окончании опыта с имеющимися туберкулезными патологоанатомическими изменениями внутренних органов. При гистологическом исследовании биоматериала от морских свинок установлено, что в ткани селезенки имеются сливные очаги и участки казеозного некроза с грануломатозной реакцией вокруг. Гранулемы имели специфиче-

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ский характер и характерное для туберкулезного процесса строение. В лимфатических узлах отмечен казеозный лимфаденит. Ткань легких – с пониженной воздушностью за счет разрастаний фиброзной и грануляционной тканей с наличием очагов казеозного некроза, которые окружены слоем эпителиоидных клеток, макрофагов с примесью лимфоцитов и плазматических клеток. Среди эпителиоидных клеток были гигантские многоядерные клетки Пирогова-Лангханса. Выделена культура микобактерий, рост которой наблюдался с 35-го дня в виде колоний округлой формы с выпуклой гладкой поверхностью и ровными краями (S-форма) цвета слоновой кости. В мазках из колоний культур, после окрашивания по Цилю-Нильсену, выявлены кислотоустойчивые короткие толстые палочки длиной 0,5–1,0 и шириной 0,2–0,3 мкм без выраженной грануляции. Генно-молекулярными исследованиями установлено наличие ДНК-мишени в биологическом материале. Выделенную культуру микобактерий идентифицировали как *Mycobacterium bovis*.

Ключевые слова: туберкулез, крупный рогатый скот, Днепропетровская область, патологоанатомические изменения, микробиологическое исследование, *Mycobacterium bovis*.

Молекулярно-генетические маркеры заболеваемости крупного рогатого скота фузобактериозом / Т.М. Супрович, Т.М. Карчевская, М.П. Супрович, Р.В. Колинчук // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 69–74.

Приведены результаты исследования аллелей гена *BoLA-DRB3.2*, которые имеют связь с заболеванием коров фузобактериозом (некробактериозом) и могут служить как ДНК-маркеры данного заболевания. Образцы крови взяты у 173 здоровых и 120 больных коров. Аллельный спектр гена *BoLA-DRB3.2* изучали с помощью ПЦР-ПДРФ. Аллели, которые имеют тесную связь с восприимчивостью или устойчивостью к фузобактериозу, определяли по показателям частоты выявления и риска заболеваемости (RR) с проверкой по критерию Пирсона (χ^2). Установлено наличие четырех аллелей (*16 *18 *23 и *51), которые имеют тесную связь со склонностью и три аллеля (*01 *03 и *22), которые ассоциируются с резистентностью к данному заболеванию.

Ключевые слова: некробактериоз, главный комплекс гистосовместимости, ген *BoLA-DRB3.2*, аллели.

Показатели крови и клеточного метаболизма при совместном течении лептоспироза и герпесвирусных инфекций первого и второго

типов у лошадей / А.Е. Галатюк, В.Л. Бегас, А.А. Антоноук, О.Р. Калнаус // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 75–79.

У лошадей с совместным латентным течением лептоспироза и герпесвирусных инфекций первого и второго типов установлено достоверное увеличение содержания гематокрита, гемоглобина, снижение количества эритроцитов, повышение содержания общего белка и иммуноглобулинов в сравнении с наличием их у здоровых животных. У лошадей с латентным течением лептоспироза и герпесвирусных инфекций первого и второго типов определено достоверное увеличение в сыворотке крови содержания оксида азота, церулоплазмينا, растворимого фибрина и достоверное снижение содержания фибриногена и гаптоглобина.

Ключевые слова: герпесвирус лошадей, оксид азота, церулоплазмин, гаптоглобин, церулоплазмин, фибриноген, ринопневмония.

Палий А.П. Методические аспекты определения бактерицидных свойств дезинфектантов / А.П. Палий, С.А. Гужвинская, К.В. Ищенко // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 80–84.

Представлены результаты усовершенствования методических подходов к изучению бактерицидных свойств новых дезинфицирующих препаратов и проведению дезинфекции при туберкулезе сельскохозяйственных животных. Предложена уникальная методика, которая позволяет в короткий промежуток времени получить достоверные данные относительно наличия или отсутствия туберкулоцидных свойств в дезинфицирующих препаратах с учетом биологических исследований, а также позволяет определить качество проведенной дезинфекции животноводческих помещений при туберкулезной инфекции.

Ключевые слова: микобактерии, дезинфекция, концентрация, экспозиция, дезинфицирующие препараты.

Вердиева Л.Э. Рубцовое пищеварение у баранчиков, содержащихся на рационах с различным уровнем клетчатки / Л.Э. Вердиева // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 85–89.

Изучено влияние скармливания рационов с различным уровнем содержания легко- и труднорасщепляемых углеводов на процессы пищеварения в рубце баранчиков. Доказано, что скармливание баранчикам рационов с более высоким содержанием клетчатки способствует увеличению в рубце общего числа

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бактерий и целлюлозолитической активности общего и белкового азота, образованию летучих жирных кислот с повышением молярных долей уксусной и пропионовой кислот.

Ключевые слова: микрофлора рубца, численность бактерий, концентрация летучих жирных кислот, содержание азота.

Федоренко С.Я. Антибактериальные свойства озонсодержащих препаратов в лечении коров и коз с гонадо- и метропатиями / **С.Я. Федоренко, В.П. Кошевой, П.Н. Скляр** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 90–94.

Установлено, что использование озонсодержащих препаратов “ОКО” и “Прозон” в лечении коров и коз с гонадо- и метропатиями обеспечивает высокую эффективность и экономическую выгоду при положительном влиянии на организм животных и отсутствии побочных эффектов. Применение озон- и прополистерапии при лечении коров и коз с острым послеродовым катарально-гнойным эндометритом и диорганной патологией (гиполютеолиз↔субклинический эндометрит) позволяет не только устранить клинические признаки заболеваний (сокращение продолжительности периодов терапии по проявлению эструса и повышению оплодотворяемости), но и полностью излечить животных, что подтверждено результатами цитологического исследования цервикальных мазков.

Ключевые слова: острый послеродовой катарально-гнойный эндометрит, диорганная патология (гиполютеолиз↔субклинический эндометрит), терапия, “ОКО”, “Прозон”.

Кацемба Н.В. Диагностика вагинитов бактериальной этиологии у нутрий с использованием метода колпоцитоскопии / **Н.В. Кацемба** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 95–97.

Одной из нерешенных проблем в разведении нутрий является диагностика субклинических патологий бактериальной этиологии, в частности вагинитов, на ранних этапах развития процесса. При их несвоевременном выявлении самки перегуливают, их осеменение неэффективно и обуславливает получение низких доходов. Колпоцитоскопия – недорогой и простой в исполнении метод оценки состояния половых органов самок нутрий, использование которого обеспечивает объективную диагностику вагинитов бактериальной этиологии, позволяет разработать и внедрить обоснованное и своевременное лечение, а также предупредить более сложные последствия, например, внутриутробное инфицирование, эмбриональную смертность и т. д.

Ключевые слова: вагинальный (влагалищный) мазок, нейтрофилы, послеродовые патологии, воспаление слизистой оболочки влагалища.

Эверт В.В. Структурно-функциональная характеристика кроветворных компонентов скелета поросят с признаками латентной и субклинической цирковирусной инфекции II типа / **В.В. Эверт** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 98–107.

На основании патогистологического и иммуногистохимического исследований определены структурно-функциональные особенности кроветворных компонентов скелета поросят с признаками латентной и субклинической PCV2-инфекции. Установлено, что основным тканевым компонентом исследованных костных органов поросят является костный мозг, относительная площадь которого максимальна в третьем сегменте грудной кости – 70,58–71,66 %, а в пятом грудном позвонке и пятой реберной кости его содержание практически одинаково – 51,17–55,67 %. Количественные характеристики клеточных компонентов костного мозга, как и соответственно тканевые структуры, достоверно не отличались от аналогичных характеристик костного мозга клинически здоровых и свободных от PCV-2 поросят.

Ключевые слова: PCV2-инфекция, субклиническая и латентная формы; вирусная нагрузка, тканевые и клеточные кроветворные компоненты, костный мозг, иммуногистохимия.

Проблема распространения эхинококкоза домашних животных в пригородах Житомира / **Д.В. Фещенко, О.А. Дубова, Т.А. Романишина, О.А. Згозинская, И.В. Чалая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 108–111.

Приведены данные о распространении эхинококкоза среди свиней и собак в пригородах Житомира, а также об особенностях развития патологий печени у свиней под воздействием *E. granulosus*. Установлено, что в 2016–2017 гг. экстенсивность эхинококкозной инвазии у собак не превышала 2,5 %, тогда как у свиней достигала 9,4 %. Выявлено, что в печени свиней среди других патологических изменений инвазионной и незаразной этиологии (до 11,4 %) чаще всего обнаруживали ларвоцисты эхинококка (32,7 %). Воздействие ларвоцист эхинококка на печень свиней сопровождалось атрофией и перерождением тканей, циррозом печеночной паренхимы, что снижало товарную ценность и было причиной выбраковки продукции.

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Ключевые слова: эхинококкоз, свиньи, собаки, ларвоциста, ветеринарно-санитарная экспертиза, печень.

Разработка ППД-туберкулина для млекопитающих с использованием производственных штаммов *M. bovis* Valle КМИЕВ-9, *M. bovis* Valle КМИЕВ-9КМ, методов микрофльтрации и ультрацентрифугирования / **В.Ю. Кассич, Ю.А. Байдевяттов, О.Г. Леоненко, В.О. Головки, О.В. Кассич** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 112–116.

Установлено, что отобранные путем селекции производственные штаммы *M. bovis* Vallee КМИЕВ-9 и *M. bovis* Vallee КМИЕВ-9КМ являются высокопротеиногенными и соответствуют требованиям Директивы Совета ЕС 97/12 от 17.03.1997 г. Они используются при изготовлении опытно-производственных серий ППД-туберкулина для млекопитающих. Для адаптации, селекции и накопления бактериальной массы производственных штаммов разработаны питательные среды Сотона-КФ и Сотона-ХБ, на которых культуры *M. bovis* начинают расти раньше на 4,2±1,1 суток (микробная пленка формируется на 4,1±0,9 суток раньше). Разработаны новые технологические приемы изготовления ППД-туберкулина с использованием методов мембранной микрофльтрации и ультрацентрифугирования при 14 тыс. об./мин, что позволило получить высокоактивный и специфический диагностический аллерген.

Ключевые слова: возбудители туберкулеза, микобактерии, аллергическая диагностика, аллерген, производственный штамм, технологические приемы.

Влияние комплексной терапии на гематологические показатели перепелов за кишечной инвазии / **Ю.Ю. Довгий, В.Ф. Галат, М.Ю. Довгий, А.В. Рудик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 117–121.

Установлено, что кишечные инвазии у перепелов регистрируются в ассоциации с еймериями. Первой опытной группе в течение 2-х суток давали бровадазол плюс в сочетании с иммуномодулятором авесстимом с питьевой водой, второй группе – бровадазол плюс без иммуномодулятора. При комплексной терапии ЭЭ и ИЭ при гельминтозах составили 100 %, при протозоозах – уменьшилось количество ооцист еймерий. В крови перепелок, получавших авесстим в комплексе с препаратом бровадазол плюс, определено достоверное снижение количества лейкоцитов, базофилов в сравнении с показателями птицы второй группы. При комплексном лечении гельминтно-протозойной инвазии наблюдали до-

стоверное повышение содержания гемоглобина, альбумина и снижение содержания общего билирубина, снижение активности АЛАТ и АсАТ. Комплексное лечение (бровадазол плюс + авесстим) свидетельствует об общем положительном влиянии компонентов на восстановление систем и органов организма, гемопоэза и функций гепатоцитов, что подтверждается биохимическим составом крови исследуемых перепелов. Восстановление морфологических и биохимических показателей в крови перепелов до физиологических границ позволило существенно уменьшить воздействие токсинов гельминтов и еймерий на ткани и органы.

Ключевые слова: ткани, органы, еймерии, ассоциации, токсины, возбудители, метаболиты, яйца.

Пероцкая Л.В. Географические и ландшафтно-экологические особенности проявления рожи свиней на территории Одесской области (1960–2016 гг.) / **Л.В. Пероцкая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 122–131.

Показана длительная динамика уровня эпизоотического напряжения рожи свиней, детальное исследование которой раскрывает определенные закономерности проявления данной инфекционной болезни. Достоверно подтверждено наличие в пределах области географических и ландшафтно-экологических особенностей эпизоотического процесса. Последние приобретают свое проявление лишь на фоне отсутствия фактора вакцинаций, который нивелировал географическую и экологическую специфику болезни в животноводстве области. При низкой активности данного фактора самые высокие показатели регистрации рожи свиней оказались характерными для увлажненных территорий юго-западных районов, а также с мощной балочно-речной сетью и для северных лесостепных районов, где преобладают богатые гумусом черноземы.

Ключевые слова: зоонозная рожа, сапроноз, источник инфекта, эпизоотический процесс, метеоклиматические особенности.

Ващик Е.В. Эпизоотологический мониторинг псевдомоноза птицы и ассоциированных с ним бактериозов в птицеводствах Украины / **Е.В. Ващик, Т.И. Фотина** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 132–136.

Мониторинг изоляции *P. aeruginosa* по отношению к возбудителям других бактериозов на птицефабриках Украины указывает на циркуляцию *P. aeruginosa* среди различных видов промышленной птицы, при этом чаще всего

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в форме ассоциированного течения на фоне колибактериоза, стафилококкоза, протеоза, сальмонеллеза (85 % случаев). В среднем по всем хозяйствам различного технологического направления преобладали изоляты *E. coli* – 37,58 % и *P. aeruginosa* – 22,98 %, кокковая микрофлора выделялась в 20,23 % случаев. Количество культур *Proteus ssp.*, *Klebsiella ssp.*, *Citrobacter ssp.*, *Enterobacter ssp.*, *Yersinia ssp.*, *Campilobacter ssp.*, *Clostridium ssp.*, *Salmonella ssp.* составляло 19,21 % от общего числа изолятов.

Ключевые слова: бактериальные инфекции, колибактериоз, *P. aeruginosa*, *E. coli*, *Proteus ssp.*, *Citrobacter ssp.*, *Enterobacter ssp.*, *Yersinia ssp.*, *Campilobacter ssp.*, условно-патогенная микрофлора.

Гематологический и биохимический профили крови цыплят-бройлеров при воздействии биологически активной добавки / **Н.Э. Лисовая, Н.В. Шкодяк, Н.И. Жила, Т.Р. Левицкий, О.В. Михалюк, Г.Ю. Недилька, Г.М. Михалусь** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 137–142.

Представлены результаты морфологических, иммунологических и биохимических исследований, оценки влияния кормовой добавки на основе экстракта из корня имбиря на морфофункциональное состояние, гематологический и биохимический профили крови и иммунный статус молодняка птицы. Установлены безопасность длительного применения исследуемого препарата при выращивании цыплят-бройлеров и позитивное влияние на морфофункциональное состояние организма, иммунный статус молодняка птицы.

Ключевые слова: цыплята-бройлеры, кормовая добавка, гематологические, биохимические исследования, иммунитет.

Содержание жирных кислот в желтке яиц и печени эмбрионов перепелов при разных уровнях токоферола в корме / **В.В. Трач, В.В. Данчук, С.В. Мидык, В.О. Ушкалов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 143–148.

Приведены новые научные данные об особенностях жирнокислотного состава желтка оплодотворенных перепелиных яиц и тканей печени 14-суточных эмбрионов перепелов породы фараон (*Coturnix japonica*) мясного направления продуктивности. Доказано влияние на жирнокислотный состав тканей печени эмбрионов перепелов. дополнительного введения в рацион маточного поголовья витамина Е 20 г/т. Методом высокочувствительной газовой хроматографии в желтках перепелиных яиц обнаружены и идентифи-

цированы 19 жирных кислот. В печени исследуемых эмбрионов перепелов зарегистрированы 15 жирных кислот. Дополнительное введение в рацион маточного поголовья токоферола способствовало увеличению доли пальмитиновой (на 1,44 %; $p < 0,05$) и стеариновой (на 0,52 %; $p < 0,05$) кислот в тканях печени эмбрионов. Уменьшение суммарного содержания как моно-, так и полиненасыщенных жирных кислот в печени эмбрионов 14-суточных перепелов при дополнительном введении в рацион маточного поголовья витамина Е сопровождается достоверным ростом отношения суммы насыщенных жирных кислот к сумме ненасыщенных (на 10,8 %; $p < 0,05$). Установлена тенденция к увеличению доли ω -3 жирных кислот (на 0,09 %) и уменьшение доли ω -6 и ω -9 жирных кислот на 0,97–1,07 % в печени эмбрионов перепелов опытной группы, в результате чего отношение ω -6/ ω -3 полиненасыщенных жирных кислот было на 5,3 % меньше, чем в контроле. **Ключевые слова:** перепела, жирные кислоты, желток, печень, витамин Е.

Усовершенствование системы антирабических мероприятий в Украине / **И.Н. Полупан, Ж.Н. Дрожже, Ю.А. Гибалюк, Я.Н. Шарай** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 149–152.

Представлены некоторые усовершенствованные методические подходы к проведению пероральной вакцинации против бешенства диких плотоядных животных. Эти материалы вошли в разработанные и утвержденные Научно-методическим советом Госпродпотребслужбы Украины методические рекомендации “Планирование, организация и проведение пероральной иммунизации плотоядных животных против бешенства”. Освещены современные аспекты проведения воздушного распределения вакцины и методика фиксирования географической локализации распределения приборами на базе GPS.

Ключевые слова: бешенство, дикие плотоядные животные, антирабическая вакцина, пероральная вакцинация, воздушный транспорт, GPS.

Эффективность применения настоек фитопрепаратов против криогенных эталонных штаммов *St. aureus*, *St. epidermidis* и *Ps. Aeruginosa* / **В.В. Захарский, О.Н. Кулишенко, П.А. Давыденко, И.В. Боровик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 153–156.

Изучено антибактериальное воздействие растительных настоек на эталонные криогенные референс-штаммы. Рекомендованы

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для борьбы с полирезистентными штаммами *St. aureus*: элеутерококк колючий; *St. epidermidis*: прополус; *Ps. aeruginosa*: апельсин. Настойка из граната обыкновенного оказывала бактериостатическое действие на все изучаемые опытные микроорганизмы.

Ключевые слова: зона угнетения роста микроорганизмов, растительные настойки, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*.

Радзиховский Н.Л. Сравнение чувствительности перевиваемых линий культур клеток к коронавирусу собак / **Н.Л. Радзиховский** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 157–160.

Представлены данные о возможности использования перевиваемых линий культур клеток СПЭВ, ВНК-21, РК-13 для культивирования и накопления коронавируса собак, полученного из полевого изолята. Определены сроки и интенсивность проявления цитопатогенного действия на разные линии культур клеток. Перед проведением культуральных исследований лабораторно подтверждена моноинфицированность в ИФА. Цитопатогенное действие коронавируса отмечали через 48 часов после заражения культур клеток, более интенсивный процесс разрушения клеток регистрировали в линии ВНК-21 и РК-13, где на 5–6 сутки почти стабильно фиксировали 90–100%-ное цитопатогенное действие вируса, а титр инфекционной активности рос с каждым новым пассажем вирусного материала. **Ключевые слова:** коронавирус собак, полевой изолят, культуральные свойства, цитопатогенное действие, СПЭВ, ВНК-21, РК-13.

Совершенствование питательной среды для культивирования клостридий наночастицами меди (CuNP) / **Е.П. Минцюк, С.А. Ничик, О.И. Горбатюк, С.Н. Дибкова, Л.С. Резніченко, Г.Ф. Риженко, В.А. Андрияшук, Т.Н. Уховська, А.М. Жовнир, С.Н. Тютюн** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 161–168.

Представлен анализ результатов эксперимента, связанного с улучшением ростовых свойств питательной среды для культивирования анаэробных бактерий *C. septicum* при использовании наночастиц меди (CuNP) и усовершенствовании некоторых технологических приемов в биотехнологии изготовления эффективных ВИС против бактериальных инфекций животных анаэробной этиологии на этапе получения высококонцентрированных антигенов. Определены стимулирующее влияние CuNP на ростовые процессы и процессы размножения *C. septicum* при его

применении в диапазоне концентраций от 0,1 до 0,0031 мг/мл с наступлением экспоненциальной фазы клостридий через 24 часа. Минимальная стимулирующая концентрация CuNP составляет 0,025 мг/мл и обеспечивает наибольшее накопление *C. septicum* – в 1,83 раза выше в сравнении с контролем.

Ключевые слова: питательная среда для культивирования анаэробов, *C. septicum*, наночастицы меди, концентрация CuNP, бактериальная масса.

Сосницкий А.И. Изоляция и идентификация эпизоотической культуры *Pasteurella multocida subsp. gallicida* штамм SA-18 / **А.И. Сосницкий, А.А. Сосницкая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 169–173.

Установлено, что этиофактором инфекционной патологии у 3-месячных цыплят вивария, протекающей по классическому типу эпизоотического процесса без эстафетной передачи возбудителя, является *P. multocida*. Заболевание характеризовалось септическим патогенезом, острым течением с летальным исходом, без патогномонических постморбидных изменений. У одного из заболевших цыплят в агональном состоянии, с диагностической целью, отобран стандартный патологический материал. При бактериологическом исследовании изолирован эпизоотический вариант пастерелл, идентифицированный по комплексу признаков как *P. multocida sb. gallicida* штамм SA-18, индуцировавший летальный пастереллез у цыплят. Культура возбудителя была патогенной и высоковирулентной для лабораторных животных, обладала характерными для вида и подвида кардинальными биологическими свойствами, давала высокий урожай прокариот при стационарном культивировании на общепринятых питательных средах. Изолированная культура по совокупности биологических свойств оказалась перспективной моделью для создания инактивированного бактериина в составе поливалентной противопастереллезной вакцины, адаптированной для всего антигенного спектра полевого возбудителя, циркулирующего в нативных условиях.

Ключевые слова: эпизоотическая культура, *P. multocida sb. gallicida*, идентификация, кардинальные характеристики, патогенность, вирулентность, сепсис.

Бибен И.А. Микробиологическая характеристика пробиотической культуры *Aerococcus viridans* штамм BI-07 / **И.А. Бибен** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 174–177.

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Рутинными бактериологическими методами изолирована культура индигенного нерезидентного аэрококка, обладающего ценными пробиотическими потенциями. Микробиологические характеристики изолированного аэрококка сканированы с помощью общепринятых бактериологических методов относительно стрептококков и на основании анализа кардинальных биологических свойств, с использованием определителя Берджи идентифицирована видовая принадлежность изолированной культуры прокарриота – *Aerococcus viridans*. Культуру депонировали как производственный штамм *BI-07* для использования в качестве пробиотика в составе симбиотического препарата Субазрин. Штамм обладает типичными для вида свойствами: грампозитивный аэрококк, неподвижный, бескапсульный, факультативный анаэроб, хемоорганотроф с окислительным типом метаболизма, сапрофит, нерезидентный прокарриот покровных тканей с высокой колонизационной потенцией и антимикробным антагонизмом, продуцирующий биологически активные физиологически полезные вещества.

Ключевые слова: *A. viridans* штамм *BI-07*, пробиотик, индигенная культура, биологически активные вещества, микробиологические свойства.

Ивлева О.В. Усовершенствование серологической диагностики метапневмовирусной

инфекции птицы / **О.В. Ивлева** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2018. – № 1(47). – С. 178–182.

Приведены результаты эпизоотологического мониторинга и скрининга относительно распространения метапневмовирусной инфекции среди сельскохозяйственной птицы фермерско-приусадебных хозяйств Харьковской области. С помощью ИФА-метода (набор фирмы "IDEXX", США) выявлено позитивно реагирующих индюков на МПВИ в среднем 78,0 % с титрами антител 3776–27869, кур – 100 % в пределах 4997–10414. Отсутствие отечественных диагностических препаратов и наличие чрезвычайно дорогих импортных подтолкнули к необходимости разработки сравнительно недорогого диагностического набора ИФА для определения антител к МПВИ с использованием в качестве антигенов отечественных штаммов метапневмовируса. Разработана отечественная ИФА-тест-система для диагностики данной инфекции у индюков и кур, определены технологические характеристики нового диагностикума. Оценка чувствительности и специфичности тест-системы осуществляется путем сравнительного анализа результатов тестирования сывороток в предложенной тест-системе ИФА с ИФА-тест-системой фирмы "IDEXX" (США).

Ключевые слова: эпизоотология, мониторинг, заболевание, индейки, куры, иммуноферментный анализ, тест-система.

ABSTRACTS. REFERENCES. KEYWORDS

Tuberculosis – the direction of knowledge and problem solving (p. 6–14)

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Long-term studies of one epizootic strain in the dynamics of numerous sub-cultures in some cases confirmed the results of other authors in the previous decades, in other cases – have found out previously unknown properties – to multiply in conditions of low positive temperatures (3 °C).

It is shown, that for passages through artificial nutrient medium with different pH, the rate of formation of colonies is significantly different. Faster colonies appear in medium with pH 6,5–6,7 in comparison with pH 7,1–7,2. The latter (7,1–7,2) after 15–20 sub-cultures reduces the activity of reproduction of mycobacteria, which defines them as slow-growing. Over time, the growth of culture varies from single colonies to continuous growth along the line of mycobacteria inoculation. Especially this phenomenon is observed by the appearance in the population of mycobacteria of adaptive (nonacid-resisting) transitional forms of the causative agent of tuberculosis. On this background, an opportunity for mycobacteria to actively display peroxidase, catalase, dehydrogenase activity, grow on simple nutrient media with simultaneous decrease in activity to form a cord-factor and to cause the death of Guinea pigs with virtually no allergic reaction to purified protein derivative (PPD)-tuberculin for mammals.

In the long-term storage of samples in the tube on the nutrient medium which practically did not have a growth of colonies (117 and 118 sub-cultures) at 37 °C cultivation and after 20 months cultivation in the conditions of 3 °C, the dissociation of avirulent clones of mycobacteria had been observed.

The content of total lipids is dynamically reduced from 11,8±1,6 to 1,74±0,28 % by weight. The qualitative composition remains unchanged, although the quantitative content was changed. At the same time, the quality of free fatty acids as well as their quantitative content was changed. The content of short-chain free fatty acids increases while simultaneously is reducing the content of long chain acids. Some of the last on 150 sub-culture are not identified.

In this background, the morphology of nonacid-resisting mycobacteria tends to change: for the temperature of cultivation 3 °C as the last morphological form is nonacid-resisting grains (elemental bodies), which after two passages through Guinea pigs in the isolated colony of L-forms, transforming into granular forms (after 300 days of growth at 3 °C) are reversed in typi-

cal acid-resisting bacillus of the causative agent of tuberculosis at 37 °C – acid-proof bodies. At this temperature (37 °C) mycobacteria are poorly cultivated or not cultivated.

At the same time, it was found that filtration forms (elemental bodies) generate the rod-shaped variants of mycobacteria.

The generalization of long-term research shows that for mycobacteria there is a biological cycle of development that determines the endlessness of the existence in the nature of the causative agent of the tuberculosis: acid-resisting bacillus → adaptive and classical L-forms (ovals with different optical density of the surface) → released from L-forms different grains (elemental bodies) → acid-resisting bodies of tuberculosis.

Keywords: *M. bovis*, nutrient media, dissociation, biological properties, enzymatic activity, cord-factor, virulence, lipids, biological cycle of development.

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Biochemical and immunological blood parameters of cows of infected by Fasciolosis and Dicrocoeliosis (p. 15–19)

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It was found that trematodaes are ones of the most dangerous and widespread helminths of ruminants according to the literature. There are the results of studies some biochemical and immunological blood parameters in cattle with parasites *Fasciola hepatica* and *Dicrocoelium lanceatum* in the article.

Most biochemical parameters indicate that the main changes associated with destructive processes in the liver of cows infected by *F. hepatica* and *D. lanceatum*. The development of helminthes has toxic effect on hepatocytes, that is contributing to increase the permeability of biological membranes in cells. These changes increase the enzyme activity in serum, so we can observe a significant increase of ALT activity ($P < 0,05$) in particular the research.

It was found that *Fasciola* infection leads to a decrease of total protein by an average in 5,5 % and increase of bilirubin in 20,6 %. It was recorded that cholesterol was increased to $6,02 \pm 0,46$ (at *Fasciolosis*) and $5,7 \pm 0,41$ mmol/l (at *Dicrocoeliosis*) – $P < 0,01$, that is confirming the strengthening of catabolism in the body and directly indicating the destruction of hepatocytes. Helminthes have negative effect on the performance of the immune system of sick animals, showing a reduction of Ig M in 10,0 % at *Fasciolosis* and a 7,7 % at *Dicrocoeliosis* for chronic disease. However, the 2,5 % reduction of Ig G in group F and 1,95 % reduction in group D, compared with the control were noted.

The main level of immune cells in infected cows had significant differences from that of healthy animals. So, B lymphocytes (SD22) were $11,6 \pm 0,75$ % (at *Fasciolosis*) and $11,7 \pm 0,7$ % (at *Dicrocoeliosis*) in the experimental groups. However, the figure was $14,4 \pm 1,03$ % in healthy cows.

It is believed that the test of nitroblue tetrazolium (NBT-test) provides important information not only about the function of neutrophils, but their reaction to the toxic products of the pathological process of the body in general. It was decreased in F & D groupes ($P < 0,01$ and $P < 0,05$, respectively). The indicator of phagocytic index was decreased in 7,5 % ($P < 0,05$) at *Fasciola* infected cows also.

Keywords: cattle, helminths, parasitism, immunoglobulins, *F. hepatica*, *D. lanceatum*.

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Microbiological evaluation of the quality of dry leaven, which are sold in the commercial networks of the city of the Dnipro (p. 20–24)

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The results of the study of dry starter cultures used for the manufacture of yogurt are presented. After 6 hours of research the high activity of starter cultures “VIVO” (homogeneous consistency of dense clot with pure tender pleasant juicy taste and pronounced aroma) is established, the average activity of ferment “GENESIS” (semi-solid clot, not pure sour-milk taste and medium aroma) and low – “GOODFOOD” (no clot, astringent aqueous-mucous consistency of mass, sweet to taste with moderate aroma). The smell and taste of the formed clots of all three starter cultures was characteristic of yogurt. The test for

the presence of carbon dioxide gas was negative in all samples, indicating the absence of microorganisms capable of gas formation and the destruction of the clot that formed. The titrated acidity of the starter cultures “VIVO” and “GENESIS” was 80 °T and corresponded to normative indicators, while “GOODFOOD” was on the lower limit of the norm (65 °T).

With prolonged storage of starter cultures (during 5 months at 4 °C), their activity decreased by almost 2 times. In this case, after 12 hours of fermentation in the of the samples of starter cultures “VIVO” and “GENESIS” found a pronounced sour taste, in “GOODFOOD” – the latter was moderately sweet. Increasing the time of fermentation leads to the accumulation of lactic acid. The lower activity of the “GOODFOOD” leaven is due to the predominance of lactic streptococci in its composition, which contribute to the formation of a thick clot of viscous consistency and with a delay (8 hours), in comparison with the starter cultures “VIVO” and “GENESIS”. Non-dairy bacteria in aerobic conditions were detected in the study of starter cultures “GOODFOOD”, in anaerobic conditions – in the starter cultures “GENESIS”. Also in leaven “GENESIS” is installed cells of yeast-like fungi. In the medium Saburo, on the 5th day after sowing, there were small, convex white colonies that had a shiny surface and smooth edges. Chlamydo-spores and pseudomycelium were detected by microscopy. There was no change in color and gas formation in the MacConkey broth: floats that were placed in the test tubes the remained on the bottom, indicating the absence of bacteria the *E. coli* in the starter cultures.

Such non-dairy microorganisms refer to technically harmful microflora, which can lead to the appearance of defects and a decrease in the quality of the finished product, because can cause profound destruction of proteins.

Keywords: leaven, yogurt, organoleptic parameters, microbiological evaluation, activity, acidity, non-dairy bacteria.

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Dynamics of changes in the productive quality of hens under the influence of selenium and phyto additives (p. 25–28)

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Analysis of the survey shows that when included in the diet of laying hens first experimental group sodium selenite mass index eggs end of the study increased by 1,9 % compared with the control group. In laying hens second experimental group who were given phyto additives also observed an increase in egg weight compared with the control group to 2,27 %. A similar situation was observed in laying hens third experimental group were fed sodium selenite combined with phyto additives, egg weight increased by 2,49 % ($p < 0,001$) compared to the control group. It should be noted that an increase in weight of the eggs increases the mass of its parts.

Since the average weight of yolk egg laying hens first experimental group were fed sodium selenite increased by 2,8 %. In laying hens second experimental group who were given phyto additives also observed an increase in the average weight of the yolk by 7,4 % ($p < 0,001$). In the third experimental group, which was administered in the diet sodium selenite combined with phyto additives average yolk mass increased by 7,0 % compared to the control group. Quality eggs directly depend on egg weight and the thickness of the shell and its mass.

As seen from the results eggshell mass index increased at the end of the experiment, laying hens first experimental group by 7,8 % ($p < 0,05$) compared with control. In laying hens second experimental group who were given phyto additives also observed increase in egg shell weight by 5,4 % at the end of the experiment. A similar trend of increasing egg shell weight by 6,2 % was observed in laying hens third experimental group were fed sodium selenite in combination with medicines.

In laying hens as the second experimental group who were given phyto additives with basic diet and the third experimental group were fed sodium selenite combined with phyto additives indicator index form eggs in both groups was higher by 1,0% compared with the control and amounted to 76,97 g ($p < 0,05$) and ($p < 0,01$), respectively. In laying hens the first experimental group in which diet was administered sodium selenite significant differences from the control group did not. Analyzing the effects on egg production of laying hens sodium selenite combined with feed phyto additives "Fitopank" and "Fitohol" we can conclude that during the experiment observed increase productivity in all experimental groups of hens compared to the control. Thus, in the first experimental group egg production increased by 9,5 %, second group – 9,3 %, in the third – 9,9 % compared with the control group. In addition, the use of feed enriched with sodium selenite and phyto additives "Fitopank" and "Fitohol" possible not only to minimize the number of non-standard carcasses, but also struck out the possibility of their occurrence, which is confirmed by the absence of unusual carcasses in the third experimental group.

As the results of our study, weight carcasses likely increases in laying hens first experimental group was 17,9 %, the second research – by 18,5 % and the third 20,4 % ($p < 0,01$), respectively. Thus, we can assume that the enrichment of the diet of hens-layers with sodium selenite and phyto additives "Fitopank" and "Fitohol", which includes a significant amount of biologically active substances that contribute to the complex action on the body of chickens and, accordingly, positively affect the product category, slaughter output, increase pre-slaughter weight and,

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as a consequence, an increase in the mass of non-disembowel and disembowel carcasses.

Keywords: egg production, carcass, heavy metals, laying hens, sodium selenite, "Fitopank", "Fitohol".

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The relationship between milk yield of cows and their growth in ontogenesis depends on the duration of the period of milk intake (p. 29–35)

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Intensive management of the dairy cattle breeding industry is associated with a reduction in

the useful life of livestock. Therefore, getting a healthy heifer remains an important point in the system of effective work of a dairy enterprise. It is known that the growth and development of the calf largely determines the future productivity of the dairy cow. Highly productive animals, as a rule, have a higher energy of growth and a living mass in ontogenesis, so this is important for selection. However, unfavorable economic conditions force stockbreeders to reduce dairy feed for calves, in favor of early consumption to concentrates. Inadequate consumption of milk can badly affect their health and productivity. The purpose of this study was to investigate the effect of the level of consumption of calf milk on the correlation between its growth and milk yield in the future.

It was found that calves, who received more milk for a longer time, had higher body weight gain – by 12,0–22,6 % ($P < 0,01$). This difference in the process of how animals grow decreased. Correlation-regression analysis showed that the relationship between live weight and milk yield, milk fat and protein in three lactations is low and medium, mostly negative.

However, it was noted that with the intensive growth of calves, the correlation between the mass at the age of six months and the yield of milk for the entire productive life was rather high, respectively, $r = 0,46$; $r = 0,41$ and $r = 0,40$ ($P < 0,05$). The coefficient of determination was 15,6–21,6 %.

Growth energy had a closer relationship with productivity than with the mass of calves in certain periods of ontogeny. It depended on the amount of milk eaten in different conditions in which animals were grown. With a rapid growth energy, a positive relationship with lifelong productivity of animals is observed already in the early periods of development ($r = 0,17–0,34$, $R^2 = 2,9–14,5$ %). Low weight gain makes it possible to predict the level of cow productivity only in the late stages of ontogeny ($r = 0,71–0,98$, $R^2 = 1,4–96,3$ %).

In this study, it can be concluded that intensive growth during early ontogeny allows earlier evaluation of the yield of milk of the cow due to a closer correlation between these signs.

Keywords: cows, Holstein breed, milk productivity, energy of growth, correlation.

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Cultural, tinctorial properties and morphology of *M. bovis* of different morphological forms for long-term storage and low plus temperatures (p. 36–41)

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The research was conducted with 15 cultures of fast-growing strain *M. bovis* that were passaged through an egg nutrient medium with different pH of 37 °C. The study found that mycobacteria, which were stored on the nutrient medium for 9–12 years, showed their vitality, and also being transplanted to a fresh medium can form subcultures. It was found that this ability is higher in cultures that were stored in a medium with a pH of 6,5 by 28 %. Estab-

lished mycobacteria subcultures of this strain has an ability to grow at the temperature of 3 °C, which was not noticed before. Herewith the growth in one subculture was observed only at 37 °C, and in three subcultures – only at 3 °C, six subcultures grew at both temperatures of cultivation, and five did not grow in any temperature regime, which may indicate that they are losing ability to multiply after prolonged keeping at 3 °C. Significant differences between the morphological forms of mycobacteria of initial cultures and their subcultures are established. The first were formed by a variety of morphological variants, usually non-acid-resistant sticks, grains, filiform and L-forms and another were more non-acid-resistant variants, filiform and L-shapes. Separate subcultures could form a pigment and were capable to change their surface mainly to the smooth (S-shape). The present significant variation in the results may be due to the fact that mycobacteria of the researched cultures were kept in a nutrient medium with excellent pH values, which probably determined different metabolism and biological activity.

Keywords: mycobacterium, morphology, acid resistance, surface character, pigment.

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ses and determine the therapeutic effectiveness of anti-parasitic preparations. Helminthoscopic investigations were held by flotation method of G.O. Kotelnikov and V.M. Khrenov using ammonium nitrate on the basis of the research-study laboratory at the Department of parasitology and veterinary-sanitary expert examination of Poltava State Agrarian Academy. The calculation of eggs in 1 g of feces was made by the method of V.N. Trach using NematodaCalc_v1 software. The collected ectoparasites were put in glassware, filled with 70 % of ethyl alcohol. Further on they were morphologically examined and identified in species with the help of optical microscopy. In all 55 pigeons were examined. The conducted research showed, that such helminthes, as *Heterakis* spp. and *Capillaria* spp. and malophagues *Columbicola columbae*, *Campanulotes compar*, *Bonomiella columbae*, *Horchstiella lata* Piaget parasitize on the territory of the private pigeon house in the town of Poltava. It was found, that in case of *Columbicola columbae* and *Bonomiella columbae* the prevalence of infection is 100,0 %, and *C. compar* – 41,8 %. It was revealed that 76,3 % of ornamental pigeons is infested with *Heterakis* spp. and 69,1% – with *Capillaria* spp. correspondingly. The course of associative four-component infection, which was found in 41,8 % of pigeons, including: *C. columbae* – 207 specimens, the mean value – 9 specimens, *B. columbae* – 69 specimens, the mean value – 3 specimens, *H. lata* – 61 specimens, the mean value – 2 specimens, *C. compar* – 83 specimens, the mean value – 1,5 specimens. Three-component infection was registered in 17 pigeons – El 30,9 % including: *C. columbae* – 153 specimens, the mean value – 9 specimens, *B. columbae* – 51 specimens, the mean value – 3 specimens, *H. lata* – 50 specimens, the mean value – 2 specimens. Two-component infection was detected in 27,3 % of pigeons: *C. columbae* – 135 specimens, the mean value – 9 specimens, *B. columbae* – 45 specimens, the mean value – 3 specimens. One-component infections were not revealed. In case of associative course of heteracosis and capillariasis the therapeutic effectiveness of Brovadasol plus and Brovalevamisol 8 % is 100,0 %. A high effectiveness of ectosan powder was confirmed on the third day of its using (EE=80,0 % and IE=96,1 %).

Keywords: helminthes, malophagues, parasitizing, spreading, preparation effectiveness.

Spreading and Treatment of Pigeon Parasitoses in the Town of Poltava (p. 42–46)

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The data as to spreading the parasitoses of ornamental breeds of pigeons on the territory of the town of Poltava are given. The aim of the paper was to study the spreading of pigeon parasitoses

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Nodular dermatitis – the problem of modern veterinary medicine (p. 47–52)

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The article deals with the issue of the origin and distribution of contagious nodular dermatitis in the countries of the world. On the basis of modern information about the disease, the degree of danger of nodular dermatitis for cattle breeding in Ukraine is established. The measures that are taken to prevent the introduction of a pathogen into the territory of the state, diagnostic methods, modern means for monitoring studies and existing means of specific prevention are considered. Infectious nodular dermatitis is widespread in the African continent and as an emergent infection spreads among the cattle of European countries, approaching from the west and east to the borders of Ukraine. Outbreaks of infectious nodular dermatitis lead to significant economic losses among livestock farms that are engaged in breeding cattle, as a result of animal death or slaughter, loss of productivity, skin damage, abortion, infertility, restrictions on movement of livestock and trade. Approaching by distance of less than 50 km to the border is considered over critical, so Ukraine should have a vaccine reserve, for creating a buffer zone. Requirements for the buffer zone of the country, which has the status free from nodular dermatitis without vaccination, is the presence of the register of all animals to which the vaccine will be introduced, which will allow the immunity to be formed and the animal does not be taken ill in the presence of a pathogenic agent. And although we will lose the status of the country free from nodular dermatitis without vaccination, but there will be no outbreak of the disease and it will remain free of nodular dermatitis, however with mandatory vaccination. If at least one outbreak is registered with characteristic clinical signs, we lose the last status and begin to vaccinate animals in total, in order to preserve cattle on the territory of Ukraine. In Ukraine, which is free from nodular dermatitis, laboratory monitoring of the disease and control of vectors are constantly carried out; the means of express diagnostics have been developed, the instruction for the prevention and control of the disease has been approved. To prevent the introduction of an infectious agent into the territory of the state, special attention should be paid to the sanitary-transport control and preventive effect on animals and livestock buildings against external parasites, which are the vectors of the pathogen of infection.

Keywords: lumpy skin disease, vector, clinical signs, pathological-anatomical changes, preventive measures, heterologous and homologous vaccines, biological risks.

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Of the bactericid properties of desinfectants (p. 53–58)

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Correlation between toxicity indicators in a comparative study of acute toxicity for laboratory animals and infusions has shown that *Tetrahymena pyriformis* infusoria can be used as an alternative model for predicting acute toxicity of pharmacological substances at the stage of their screening and preclinical studies. Given that infusoria is a biological object that is quite sensitive to the effects of toxic substances, they can be used in the practice of sanitary control of the degree of toxicity of disinfectants. According to research, the developed tool belongs to the fourth class according to the classification of chemicals in the degree of danger.

Tetrahymena pyriformis is often used as a model body for the evaluation of in vitro effects of surfactant-containing agents. Determining the state of culture, the rate of its growth and morphological changes simpler in simplicity and reproducibility are the simplest toxicological analyzes.

More and more often, various simulation methods, including multiple linear regression (MLR) and several nonlinear regressions (MNLRS) that are used to predict the toxicity of *Tetrahymena pyriformis*, are proposed.

The system of veterinary and sanitary measures at livestock facilities as an obligatory component is known to request disinfection. Prevention of diseases of infectious etiology, caused by conditionally pathogenic microflora, requires the severance of the epizootic chain of disease from the source of infection. The leading role in ensuring stable veterinary welfare of livestock and health of the population is played by the effective disinfection measure, while causing minimal harm to the environment at the same time. A comparative analysis of the disinfectant influence on cryogenic strains of microorganisms was carried out according to the widely known method.

The cultivation of infusoria *Paramecium caudatum* and *Tetrahymena pyriformis* was undertaken on the milk medium. The cultures were held at the temperature (18–20 °C). The daily culture that was in the exponential phase (active) was used for the biotesting. Series of dilutions (10⁻¹–10⁻⁶%) "Aldovet FF" and "Aldovet Super Plus", "ДЗПТ-2", "FAG" were used for the toxicological investigations. As concerns the *Tetrahymena pyriformis*, the evaluation was carried out through the reaction of the death and the nature of the movement change of infusoria because of small size and impossibility of the accurate counting. The probe, in which instead of drug an

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appropriate amount of medium was added, was used as reference.

Keywords: disinfectant, bactericidal action, toxicity, *Paramecium caudatum*, *Tetrahymena pyriformis*.

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Influence of the immunobiological status of the calves' organism on productive longevity (p. 59–64)

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Decrease in productive longevity of highly productive cows in conditions of industrial dairy complexes causes one more problem which is connected with difficulties of herd timely restoration through its own offspring. Therefore, raising of heifers is very important in both breeding and economic importance in dairy cattle breeding. To that extent, significant attention is paid to the researchers' early prediction of the cows future milk productivity, even during their postnatal development. Quite often, the subject of such studies is the state of calves growth and development, while insufficient attention is given to animals blood indicators. In the available literature to us, practically there is no information on the relationship between the values of humoral and cellular immunity of calves with their future milk performance. These blood indicators are traditionally used to characterize body's immunobiological reactivity and the health of calves, and extremely rare to predict their future lifelong milk productivity. This is partly due to the difficulties associated with the duration of such studies, since the cow must complete its productive life. Our studies are covering a considerable period of time (more than ten years). Achieved results demonstrated the possibility of using immunobiological indicators of calves' blood as markers of the cows future productivity. A reliable positive relationship between bactericidal activity of blood serum of three months aged calves and their lifelong milk productivity, milk fat yield and protein ($r = 0,63-0,69$, $P < 0,05$) was found. The correlation between productive qualities and lysozyme activity of blood serum were less dense ($r = 0,57-0,59$; $P < 0,05$), as well as IgG and IgM ($r = 0,58-0,63$; $P < 0,05$). At the same time, the relationship between values of lifelong milk productivity and the phagocytic activity of neutrophils was positive ($r = 0,31-0,41$), but it was unreliable. Regression analysis has showed that values of productive longevity of Holstein cows at 21–47 % were due to the immunobiological status of the calves' organism in early postnatal ontogenesis. The search for reliable markers for predicting the productive longevity of highly productive cows in early rearing periods is extremely important for making managerial decisions. The experimental data obtained by us are only preliminary and require confirmation at a larger number of animals.

Keywords: calves, cow, Holstein breed, blood values, lifelong milk productivity, correlation.

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- Control of the wellbeing relative to tuberculosis of the horned cattle by the results of pathoanatomical and microbiological investigations (p. 65–68)**
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- The results of the study the wellbeing relative to tuberculosis by means of the pathoanatomical and microbiological investigations. As material for investigations was biological material (bits of lungs, bronchial lymph nodes) with uncertainties about tuberculosis by the nature of pathoanatomical changes, which was selected by specialists of veterinary medicine in one district of the Dnipropetrovsk region at a private slaughter point. The negative result was obtained during the microscopic and bacteriological investigations of the biological material selected from the cow. The laboratory animals were euthanized at the end of the experiment with available tuberculous pathoanatomical changes in the internal organs. As a result of the bacteriological investigation of the biological material from the laboratory animals, a culture of mycobacteria was isolated, whose growth was observed from the 35th day in the form of rounded colonies with a convex smooth surface and even edges (S-shape) of ivory color. Thus, in accordance with the results of the microbiological investigations was isolated the culture of micobacteria, identified as *Mycobacterium bovis*.
- Keywords:** tuberculosis, cattle, Dnipropetrovsk region, pathoanatomical changes, microbiological investigations, *Mycobacterium bovis*.

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Molecular genetic markers in cattle suffering from fusobacteriosis (p. 69–74)

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The article presents research findings of alleles of the BoLA-DRB3.2 gene, which are associated with cows suffering from fusobacteriosis (necrobacteriosis) and can serve as DNA markers of the disease. The research was carried out from 2012 to 2017 on several farms of Dunaievetskiy and Belogorsk districts in Khmelnytskyi region. Fusobacteriosis was diagnosed on the basis of epizootic, clinical, and pathoanatomical data and laboratory analysis results. Blood samples were taken from 173 healthy cows and 120 sick animals affected by fusobacteriosis. The allelic spectrum of the BoLA-DRB3.2 gene was studied with the use of PCR-RFLP. Alleles with a close relationship to susceptibility or resistance to fusobacteriosis, can be used as DNA markers; they were established by the rate of detection and risk of incidence (RR) with the Pearson criteria (χ^2).

The results of the research showed that the incidence of fusobacteriosis on the breeding farms of Khmelnytskyi Region ranged from 5,8 % to 15,1 % of the total number of dairy herds. In the etiology of fusobacteriosis, the leading place belongs to *Fusobacterium necrophorum*, isolated in 90,6 % of the samples of the investigated material. *F. necrophorum* has always been isolated in associations with other bacteria: staphylococ-

cus aureus, clostridia, streptococci, escherichia, and other opportunistic pathogens. The pathogen has not always grown on nutrient media, but the biological test on rabbits has always been positive. The pure culture of *Fusobacterium necrophorum* was obtained precisely by biological sampling.

37 alleles with an average frequency of 2,7 % of the 54 described by PCR-RFLP method for the BoLA-DRB3.2 have been identified in cows of Ukrainian black-and-white milk breed. 7 alleles with more than 5 % frequency have been revealed in the general population: *24, *22, *08, *16, *28, *03, and *23. Rarely observed alleles include *05, *19, *20, *29, *31 and * 39.

Four alleles (*16, *18, *23 and *51) that have a close proximity and three alleles (*01, *03 and *22) that are associated with the resistance to the disease have been established.

Keywords: necrobacteriosis, the main complex of histocompatibility, the BoLA-DRB3.2 gene, alleles.

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Indicators of blood and cell metabolism for the current course of leptospirosis and herpesvirus infections of first and second types in the concept (p. 75–79)

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The obtained results of the research indicate that in the latent course of leptospirosis and the joint course of leptospirosis with herpesvirus infections compared with healthy animals, there is a tendency to increase the number of erythrocytes and leukocytes, the content of hematocrit, hemoglobin, total protein, immunoglobulins. In horses with latent course of herpesvirus infections (in the presence of antibodies to herpesviruses of horses of the 1st and 2nd types in the blood) there is a decrease in the number of erythrocytes, hemoglobin and hematocrit, with simultaneous increase in the content of total protein and immunoglobulins in comparison with animals with a compatible course of leptospirosis and herpesvirus infections. The presented data indicate that due to the latent course of leptospirosis and herpesvirus infections in the body of horses there are no significant changes in blood parameters, which may indicate an activation of humoral protective factors. In this case, a regular increase in the levels of total protein and immunoglobulins in serum for the latent course of leptospirosis and herpesvirus infections. The obtained data testify to the activation of indicators of immunobiological reactivity of the organism in the latent course of leptospirosis in horses. However, reli-

able changes in levels of blood parameters – the content of hematocrit, hemoglobin, total protein, immunoglobulins, the number of red blood cells and leukocytes were not detected. Therefore, it is important to conduct additional studies of blood parameters, which may be markers for assessing the state of immunobiological reactivity of the body in horses with a hidden course of leptospirosis and herpesvirus infections. Detection of such markers will allow preventive measures to be taken at the early stages of disease development in individual horses in order to prevent the manifestation of clinical signs of the disease. Further details of the cellular metabolism were determined for more detailed information: nitric oxide, ceruloplasmin, fibrinogen and others. in the blood serum of animals in the latent course of the aforementioned infectious diseases. As a result of our research, we established a significant increase nitric oxide to $65,73 \pm 4,43$ and $55,86 \pm 2,71$ $\mu\text{mol/l}$ in 2–3 groups in comparison with healthy. There is also a significant increase in ceruloplasmin to $216,35 \pm 11,43$; $243,15 \pm 19,34$ mg/l in 2 to 3 groups in comparison with a healthy one. The content of haptoglobin, on the contrary, decreases to $0,61 \pm 0,03$ and $0,52 \pm 0,04$ g/l in 2–3 groups compared with healthy. Albumin content did not differ significantly in the studied groups. At the same time, a significant decrease in fibrinogen was established to $1,23 \pm 0,09$ and $1,22 \pm 0,08$ g/l in the 2 to 3 groups in comparison with healthy ones. At the same time, the content of the soluble fibrin increases significantly to $16,05 \pm 0,31$ and $21,22 \pm 0,71$ mg/\% in 2 to 3 groups compared to healthy.

Keywords: herpesvirus of horses, nitric oxide, ceruloplasmin, haptoglobin, ceruloplasmin, fibrinogen, rhinopneumonia.

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Methodical aspects of studying the bactericidal properties of disinfectants (p. 80–84)

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In the article the results of improvement of methodical approaches of study of bactericidal properties of new of disinfectant preparations and realization of disinfection are presented at tuberculosis of agricultural animals. Unique methodology that allows for the short interval of time will get reliable data whether in relation to the presence of absence of bactericidal properties at disinfectant preparations taking into ac-

count biological researches is presented, and also allows to define quality of the conducted disinfection of stock-raising apartments at a tubercular infection. The proposed comprehensive methodology for the determination of tuberculocidal properties of new disinfectants and the quality control of disinfection carried out in farm animals with tuberculosis has several advantages over existing ones. The culture (suspension) method of preliminary determination of bactericidal properties of disinfectants with the use of fast-growing atypical mycobacteria of group IV according to the classification of Rhion allows reducing the time of study of disinfectants twice. The use of *M. bovis* as a test culture of *M. tuberculosis* can lead to a biological study in laboratory animals, which makes it possible to confirm the results of a culture study. As an additional protective environment of mycobacteria from the action of chemical agents, it is suggested to use a thorn, which brings the experiment closer to the real conditions of use of disinfectants. The method for assessing the effectiveness of disinfection involves the definition of both sanitary and indicative microorganisms, as well as the additional use of test cultures of fast-growing atypical mycobacteria, which makes it possible in a short time to obtain reliable data. Disinfectants DZPT-2 (2 % – 24 hours), Ecocide C (5 % – 24 hours) and Novodez-forte (5 % – 5 hours) can be used for preventive and sanitary measures for tuberculosis of farm animals.

Keywords: mycobacterium, disinfection, concentration, exposition, disinfectant preparations.

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Cicatricial digestion in sheep contained on diets with different levels of fiber (p. 85–89)

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The effect of feeding rations with different levels of easily- and hardly digestible carbohydrates on the processes of digestion in the rumen in sheep was studied.

It has been proved that feeding to rats with diets with a higher fiber content promotes an increase in the total number of bacteria in the rumen and cellulolytic activity of total and protein nitrogen, the formation of volatile fatty acids with increasing molar fractions of acetic and propionic acids. It was found that in the scar's fluid before feeding, the concentration of total nitrogen in the group II sheep was the highest and exceeded this indicator of peers from Groups I and III by 35,02–22,86 mg% (by 33,2 % and by 19,5 % respectively). For protein nitrogen, the difference between the groups compared was 42,46 and 17,05 mg%, respectively (47 and 15,1 %).

The maximum concentration of low-molecular fatty acids was observed with the feeding of the second diet, where the level of fiber was 16 % higher. Thus, in the barley of this group, the content of the volatile fatty acids in 100 ml in the scar's fluid was 11,07 mMol, which is 12,7 % more than in peers from the control group and 6,0 % in the animals of the III group.

It has been established that the feeding of experimental rations is accompanied by an increase in the molar proportions of acetic and propionic acids, with a decrease in the proportion of butyric acid. Thus, with the content of animals on the second diet, the level of acetic acid increased by 18,5% ($P < 0,05$), and propionic – by 16,4 % ($P < 0,02$). A similar picture was observed when feeding the sheep III rations, but in less significant quantities than in the second test group.

Feeding the diet to experienced animals, where the fiber level was 16,3% higher than in the control group, the total number of bacteria was 6,9 billion more. When counting bacteria of the scar of the sheep that received the III ration, it turned out that their content was 12,5 billion / ml, that is, 3,1 billion more than in control, but 3,8 billion less than in animals, who received the second diet.

The number of amylolytic and glycerin-fermenting bacteria was greatest in I and III rations, and the content of lipolytic bacteria was lower in animals that received the II ration.

Studying cellulolytic activity of rumen microflora, we found that the highest level is observed before morning feeding. However, the maximum splitting was observed in the case of the sheep fed the II ration.

Keywords: microflora of the cicatrix, the number of bacteria, the concentration of volatile fatty acids, the nitrogen content.

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Antibacterial properties of ozone-containing preparations for treatment of cows and goats with gonado- and metropathology (p. 90–94)

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The antibacterial properties of ozone-containing preparations for the treatment of cows and goats with gonado- and metropathology have been studied. It has been established that the drugs "OKO" and "Prozon" form the basis of ozone and propolis therapy, provide high efficiency and economic benefits for positive effects on the organism of animals and the absence of side effects. Treatment of cows and goats with acute postnatal catarrhal purulent endometritis was carried out according to a purposeful program,

which is motivated by the principle of the action of the drugs. The program of antibiotic, nitrofur and sulfanilamido therapy replaced with the use of ozone-containing preparations "OKO" and "Prozon". The results of the clinical evaluation indicate that the method of treating cows and goats using ozone-containing preparations has a high therapeutic efficacy. Thus, in experimental animals, the duration of the treatment period decreased by 1,1–5,4 days compared with control, the period of the period from birth to live was reduced by 4,5–15,3 days, and fertility increased by 9,1–54,7 %.

Comprehensive therapy of cows and goats with divergent pathology (hypoluteolysis ↔ subclinical endometritis) was carried out according to the program, which provides the final alternative: a) recovery with the restoration of the morpho-functional state of the endometrium; b) prophylactic therapy of cows with hypoluteolysis (delayed regression of the yellow body). The program "use of antibacterial drugs" has been replaced by ozone-containing preparations "OKO" and "Prozon". It was established that compared with the control in experimental animals, the duration of treatment periods (for 1,6–6,1 days) and the manifestation of acute after treatment (by 4,5–12,6, fertility increased (by 21,4–47,1 %).

Due to the fact that the clinical recovery does not always indicate a complete cure, we conducted its control by conducting light optic and luminescent methods of cytological examination of cervical smears. The obtained data indicate positive changes in the characteristics of cervical smear and, accordingly, the effectiveness of ozone-containing preparations and their antibacterial properties. In particular, the number of epithelial cells and leukocytes decreased (by 19,6 or 64,7 %), as well as microbes (by 47,1 or 80,2 %) and cells with yellow-red coloration (by 6,2 % or 73,7 %) Positive is the dynamics of the ratio of the number of epithelial cells and leukocytes and epitheliocytes (from 1:3 to 1:1) with normal structure and dystrophy (from 1:3 to 2,5:1), as well as an increase in cells with a green color (3,8 or 102,9 %).

Keywords: acute postnatal catarrhal purulent endometritis, biocompound pathology (hypoluteolysis ↔ subclinical endometritis), therapy, "OKO", "Prozon".

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Diagnostic of vaginitis of bacterial etiology in the nutrias using the colpocytoscopy method (p. 95–97)

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To date, there are a number of unresolved problems in breeding of nutrias, one of which is the diagnosis of vaginitis in the early stages of the development of the process. Due to the lack of timely detection of the pathology of the reproductive organs of females in the postnatal period, in particular, the vaginitis, females go through, the fertilization of such animals is not effective and, as a consequence, the farm receives low profits. Therefore, the development of fast and cheap methods for the diagnosis of vaginitis of bacterial etiology in sodium in the early stages of the development of the process is an urgent issue. The purpose of the work was to adapt the method of colpocytoscopy for the diagnosis of postnatal vaginitis of bacterial etiology in females in the early stages of the development of the process in order to provide timely treatment and to develop methods for the prevention of complications.

Colpocytoscopy – a method of studying the state of the internal genital organs of female animals, by which they assess the condition of the mucous membrane, the presence of injuries or tumors, determine the presence of pathological processes. The essence of the technique is to paint a vaginal smear, followed by studying it under a microscope.

We performed a colpocytoscopy study of 12 females in the first week of postpartum period that had complications during labor. According to the results of our studies, 7 females out of 12 had inflammation of the vaginal mucosa. At the microscopy of the vaginal smear of these females, a large number of neutrophils were detected in all 7 diseased animals, as well as bacterial microflora: sticks, cocci in 3 out of 7 diseased animals (normally in the diestrus stage in vaginal infusion of nutrias, as in females of other animals (in

particular female), there is only a small amount of neutrophils available).

Conducting such a study becomes of special relevance, taking into account the peculiarities of the course of the genital cycle, as in some animals the fertility ability is 2–3 days after the puppy. In farms, the diagnosis of vaginitis in the postnatal period is not carried out, but very often they carry out fertilization immediately after delivery. In this case, traumatized, inflamed sex can be further infected by the female during sexual intercourse with the male and, accordingly, have more severe consequences – intrauterine infection, embryonic mortality, and so on.

Thus, colpocytoscopy is not expensive, easy to implement by a method for assessing the state of genital organs of females, the use of which provides objective diagnosis of vaginitis of bacterial etiology, allows the development and introduction of reasonable and timely treatment, as well as preventing more severe consequences such as intrauterine infection, embryonic mortality, and so on.

Keywords: vaginal (vaginal) smear, neutrophils, postpartum pathology, inflammation of the vaginal cavity.

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Structural and functional characteristics of blood-forming components of pigs with signs of latent and subclinical porcine circovirus type 2 (p. 98–107)

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In Ukraine, one of the most important livestock sectors, which successfully develops and competes in the international food market, is pig breeding. Unfortunately, the successful development of the industry is hampered by infectious diseases. One of these diseases, which has acquired global in the pig population and has a significant economic impact on the pig industry, is considered as porcine circovirus type 2 (PCV2). PCV-2 – an etiologic agent of a number of pig pathologies: postweaning multisystem wasting syndrome (PMWS) under the current nomenclature of PCV-2 systemic disease (PCV2-systemic disease, PCV2 SD); PCV-2 lung disease (PCV2 LD); PCV-2 enteric disease (PCV2 ED); PCV-2 reproductive illness (PCV2 RD), porcine dermatitis and nephropathy syndrome (PDNS) and PCV-2 subclinical infection (PCV2 SI). The most common form of PCV2-infection for a long time was considered a PCV2-systemic disease, but recently the latent and subclinical forms of the manifestation of PCV2-infection are of special importance. With the latent form of PCV2-infection, the causative agent can persist for a long time in the body and not manifest itself clinically. The subclinical form of PCV2-infection is characterized by a lack of pronounced clinical signs in PCV-2 infected pigs, but they may have growth retardation and other body reactions of varying severity. For the diagnosis of these forms of manifestation of PCV2-infection, is determined the viral load PCV-2 by quantitative PCR in blood serum of animals. It was finally established

that the main “target” for PCV-2 is the immune system, which in pigs, like other mammalian species, is at a sufficiently high level of structural and functional organization. The immune system along with the nervous and endocrine systems plays an important role in maintaining the body’s homeostasis and ensures its adaptation to the effects of unfavorable environmental factors. The author on the basis of pathohistological and immunohistochemical studies determined the structural and functional features of the blood-forming components of the skeleton of piglets with signs of latent and subclinical PCV2-infection. It was established that the main tissue component of the examined bone organs of the piglets is bone marrow, the relative area of which is maximal in the third segment of the thoracic bone – 70,58–71,66 %, and in the fifth thoracic vertebra and fifth rib bone, its content is practically the same – 51,17–55,67 %. It was established that the main tissue component of the examined bone organs of the piglets is bone marrow, the relative area of which is maximal in the third segment of the thoracic bone – 70,58–71,66 %, and in the fifth thoracic vertebra and fifth rib bone, its content is practically the same – 51,17–55,67 %. The quantitative characteristics of bone marrow cell components, as well as tissue structures, did not differ significantly from the analogous characteristics of bone marrow of clinically healthy and PCV2 free pigs.

Keywords: PCV2-infection, subclinical and latent forms; viral load, tissue and cellular blood-forming components, bone marrow, immunohistochemistry.

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The problem of echinococcosis among domestic animals in the suburbs of Zhytomyr (p. 108–111)

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Echinococcosis is zoonotic infestation, which is the causative agent *Echinococcus granulosus* (Batsch, 1786) from the family *Taeniidae*, of the class *Cestoda*. Invasion is widespread in all countries of the world with pasture type of animal husbandry, and especially sheep breeding (Argentina, Australia, Uruguay, Paraguay, Greece, North Africa, Asia). The South of Ukraine is traditionally considered to be the most dangerous region for echinococcosis. However, the Polissya region is also favorable for the creation of epizootic dysfunctional foci of echinococcosis of domestic and wild animals. The main source of echinococcosis in humans and animals is affected dogs, and the factor of transmission for animals is abiotic environment, which contains the oncosphere of the pathogen. Being in constant close contact with humans and domestic animals, carnivores create a serious threat associated with the defeat of the pathogen for the latter. Pathogenic effect on the animal organism due to the toxic, antigenic, mechanical action. This invasion causes significant economic losses caused by the vibration of parasite-affected products and a decrease in the price category of the ink of invasive pets, in particular pigs. According to the analysis of statistical data and our own research found that in 2016–2017 years the intensity of echinococcal invasion in the territory of Zhytomyr region in dogs did not exceed 2,5 %, while in pigs reached 9,4 %. According to the results of veterinary and sanitary examination in the food markets of Zhytomyr, it was found that among the pathological changes of the liver in pigs, the presence of larvocyts of *Echinococcus* (32,7 %) was more often revealed, compared with other pathologies of invasive and non-infectious etiology (up to 11.4%). For *Echinococcus* invasion atrophy of the liver, degeneration, cirrhosis of the hepatic parenchyma, reduce commodity value and is the reason for the rejection of the products marked.

Keywords: echinococcosis, pigs, dogs, larvocyts, veterinary-sanitary examination, liver.

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Development of PPD-tuberculin for mammals using the production strain of *M. bovis* Valle KMIEV-9KM, methods of microfiltration and ultracentrifugation (p. 112–116)

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The thesis is devoted to identify theoretical and practical justification, summarized research results of development, implementation and harmonization with the EU requirements “PPD-Tuberculin Mammalian purified” drug for the allergic reactions of the macroorganism. Selected by breeding, the sealed production strains *M. bovis* Vallee KMIEV-9 and *M. bovis* Vallee KMIEV-9KM appeared to be highly proteinogenic, they comply with the requirements of Council Directive 97/12 (dated March 17, 1997) and used during the production of experimental production series PPD-tuberculin for purified mammalian. The mass fraction of protein in a sample of tuberculin made from the strain *M. bovis* Vallee KMIEV-9 is $0,89 \pm 0,1$ mg/cm³, while in the sample of tuberculin of the strain *M. bovis* Vallee, KMIEV-9KM it is significantly higher ($p < 0,05$) and it comes up to $1,20 \pm 0,2$ mg/cm³. The production strain of mycobacterium *M. bovis* Vallee KMIEV-9KM during cultivation on a synthetic nutrient medium of Soton-HB or KF allows to accelerate the growth and increase the accumulation of bacterial mass of mycobacterium from one vial to $16,1 \pm 0,2$ mg and allows to increase the output of tuberculin accordingly to $1,20 \pm 0,1$ mg/cm³. For the adaptation, selection and accumulation of production strains bacterial mass, Soton-KF and Soton-HB

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nutrient media were developed, on which the *M. bovis* culture begins to grow $4,2 \pm 1,1$ days earlier and gives more accumulation of bacterial mass (microbial film is formed $4,1 \pm 0,9$ days earlier, in comparison with an initial strain).

Keywords: pathogens of tuberculosis, mycobacterium, allergic diagnosis, allergen, production strain, technological methods.

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The influence of a complex therapy on hematological indices of quails under intestinal infection (p. 117–121)

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It has been determined that intestinal invasions in quails are registered in the association with eimerias. The invasion intensity under heterakidosis amounted to –11 eggs, under ascaridosis – to 15 eggs, under *Syngamus trachealis* – to 5 eggs, oocyst *E. necatrix* – 1,2 thousand, *E. tenella* – 2,4 thousand/gr of faeces.

The first experimental group received Brovadazol Plus in combination with immune modulator Avesstim with water during 2 days, the second group received Brovadazol Plus without immune modulator. Under a complex therapy EE and IE under helminthoses amounted to 100 %, under protozoasis – the amount of eimeria oocyst has decreased.

It has been determined that the amount of white blood cells and basophils in the blood of quails which received Avesstim in combination with Brovadazol Plus has considerably decreased as compared to the indices of the second group of birds.

Under a complex treatment of helminthic- protozoal invasion has been observed a significant increase in hemoglobin and albumen content, the decrease in the amount of total bilirubin, the decrease in the activity of ALT and AST. A complex treatment (Brovadazol Plus + Avesstim) testifies to common positive effect of the components on the restoration of body systems and organs, as well as on hematopoiesis and hepatocytes functions, that is proved by biochemical blood composition of the test quails. The restoration of morphological and biochemical indices in the quails blood to the physiological limits made it possible to considerably decrease the effects of helminthes and eimerias' toxins on tissues and organs.

Keywords: tissues, organs, eimeria, associations, toxins, infectious agents, metabolites, eggs.

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Geographical and landscape-ecological features of display of erysipelas of pigs on territory of the Odessa oblast (1960–2016) (p. 122–131)

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Modern data on the ecology of non-spore causative agents of traditional farm bacterial infections – listeriosis, erysipelas and anthrax – indicate their high plasticity and functional heterogeneity in the composition of diverse ecosystems and agroecosystems. More and more facts testify to the ability of these microorganisms to rapidly realize completely different forms of existence, ecotoxically from the autotrophic to the mixotrophic, from the saprophytic to the parasitic and from the latter to the symbiotic forms. Particularly “rich” in such properties were simple, seemingly unassailable and encapsulated Gram-positive rods, widely distributed in nature – *Erysipelothrix*.

The aim of the work is to determine the possible geographic and landscape-ecological regularities in the manifestation of erysipelas of pigs on the territory of the Odessa region for the period from 1960 to 2016. The material of the research

was the long-term reporting data of district and Odessa regional departments of veterinary medicine for the period from 1960, when all manifestations of erysipelas of animals and humans began to undergo mandatory state registration. Significant amount of factual material served as retrospective data – reports, cartographic materials, journals of laboratory studies and numerous literature data. Analytical studies of the primary material were complex, which necessitated the additional use of various actual data – geographic, historical, ecological, statistical and epizootic. All practical, landscape-field and analytical studies of this work are based on standard methods, reflected in special instructions, manuals and recommendations.

In the article the of long duration dynamics of level of epizootic tension of erysipelas of pigs is represented on territory of the Odessa area the detailed consideration of that exposes certain conformities to law of display of this infectious disease. Thus for certain the presence of geographical and landscape-ecological features of epizootic process is confirmed within the limits of territory of area. The last acquire the display only on a background absence of factor of vaccinations, that leveled the geographical and ecological specific of display of illness in the stock-raising of area. At subzero activity of this factor the greatest indexes of registration of erysipelas of pigs appeared characteristic for water-wet territories of south-west districts of area, and also for territories with a powerful river-beam network and for forest-steppe Northlands, where rich in a humus black earth prevail. The geographical and landscape and ecological dependence of manifestation of erysipelas of pigs in the territory of Odessa region demonstrates essential value of the soil as one of reservoirs, factors of transfer and it is possible – as secondary source of the infek for domestic pigs, providing his initial phases of circulation till alimentary ways. The last doesn't deny a possibility of realization of epizootic process on the basis of sapronosis option.

Perspective of further researches consist in studying already directly activators and check of their ecological properties in experimental and laboratory conditions. The received results give prospect to open and solve one of the key questions of an epizootology of erysipelas connected with the nature of the activator and its vital strategy, and respectively – with the strategy to control of a disease.

Keywords: zoonotic erysipelas, sapronosis, infect source, epizootic process, meteo-climatic peculiarities.

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Epizootological monitoring of fowl pseudomonosis and its associated bacterial diseases in Ukraine poultry farms (p. 132–136)

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Introduction. Modern technologies of intensification of poultry farming often lead to the emergence of stressful situations and the violation of metabolic processes that cause increased sensitivity of the bird organism to various diseases. In such conditions, the role of conditionally pathogenic microorganisms, which are most often circulated in different associations and significantly reduce the immunity of birds compared with monoinfections, is significantly increases.

The aim of the study. The purpose of our research was bacteriological monitoring of fowl pseudomonosis and isolation of the concomitant conditionally pathogenic bacterial microflora of the internal environment, biomaterials from Ukraine poultry farms.

Material and methods of research. Bacteriological research of bacterial air pollution of poultry houses, different parts of the surfaces of poultry buildings, fodder, pathological material from dead embryos, chickens and forcedly slaughtered adult birds were conducted according to generally accepted methods.

Research results. Monitoring of the isolation of *P. aeruginosa* in relation to pathogens of other bacterial diseases in Ukraine poultry farms indicates the circulation of *P. aeruginosa* among various industrial birds, most often in associated form with colibacillosis, staphylococcosis, proteosis, salmonellosis (85 % of cases).

The associative form of *P. aeruginosa* + *E. coli* was detected in 42 % of cases; *E. coli* + *P. aeruginosa* + *Proteus ssp.* – 14 %; *P. aeruginosa* + *Proteus ssp.* – 9 %; *Staphylococcus spp.* + *P. aeruginosa* – 9 %; *Streptococcus ssp.* + *E. coli* – 8 %; *Streptococcus spp.* + *Staphylococcus spp.*

ABSTRACTS. REFERENCES. KEYWORDS

– 5 %; *Staphylococcus spp.* + *P. aeruginosa* + *E. coli* – 5 %; *Citrobacter spp.* + *E. coli* – 3 %; *Salmonella spp.* + *E. coli* – 3 %; *Salmonella spp.* + *P. aeruginosa* + *E. coli* – 2 % of associated infections cases.

On average, *E. coli* isolates in 37.58 % and *P. aeruginosa* – 22.98 %, coccal microflora – in 20.23 % of cases in all farms of a different technological direction. Number of *Proteus spp.*, *Klebsiella spp.*, *Citrobacter spp.*, *Enterobacter spp.*, *Yersinia spp.*, *Campilobacter spp.*, *Clostridium spp.*, *Salmonella spp.* was 19.21 % of the total number of isolates. The frequency of isolation of *P. aeruginosa* and *E. coli* was 3 times greater than the cases of isolation of the coccal microflora and 3.15 times of other bacterial pathogens in the poultry.

Keywords: bacterial infections, colibacteriosis, *P. aeruginosa*, *E. coli*, *Proteus spp.*, *Citrobacter spp.*, *Enterobacter spp.*, *Yersinia spp.*, *Campilobacter spp.*, conditionally pathogenic microflora.

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Hematological and biochemical blood profile of broiler chicken at application of biological active feeding (p. 137–142)

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Resistance of microorganisms to antimicrobial drugs is one of the main problems in the field of human and animal health. Intensive use of antibiotics in agriculture has led to the resistance of pathogens to many antibacterial agents in livestock and poultry farming. To overcome the problem it's necessary to have alternative ways for increasing the bird's resistance to diseases, while maintaining productivity. So in poultry breeding the use of biologically active drugs based on ginger root, which have anti-inflammatory, antiparasitic and immunomodulatory properties can be promising.

The aim of the study. For the studding of long-term effects of preparations based on ginger root and their effectiveness, prophylactic and stimulating action in poultry breeding, the clinical investigations of biologically active fodder additive containing extracts from three species of ginger root were carried out on chicken broilers in State Scientific-Research Control Institute of Veterinary Medicine Products and Food Additives. The article presents the data of broiler chicken's blood morphological, immunological and biochemical indices under the application of investigated products.

It was revealed that the long-term application of investigated food additive was well tolerated by the experimental poultry and did not affect negatively on bird's clinical state and their hematological and biochemical indices. On the basis of results, the food additive contributed to the activation of metabolic processes in chicken organism, which was confirmed by higher bird's body mass indexes and higher blood hemoglobin content, detected on the 28th and 45th day of the experiment, and activation of some immune reactions on 28th day. The oral application of investigated food additive to chicken broiler s was safely in doses and under duration of application recommended by the manufacturer.

For further accumulation of scientific data on the action of fodder additives on the basis of ginger root, it is necessary to carry out the researches on the others types of animals and poultry.

ABSTRACTS. REFERENCES. KEYWORDS

Keywords: chicken-broilers, feed additive, haematological, biochemical tests, immunity.

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The content of fatty acids in egg yolks and quail embryo liver at different levels of tocopherol in feed (p. 143–148)

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The article presents new scientific data on the characteristics of the fatty acid composition of the yolk fertilized quail eggs and liver tissues of the 14-day embryos of the quail of the breed of Pharaoh (*Coturnix japonica*). The influence of an additional setting on the vitamin E (in a dose of 20 g/tonn) on the fatty acid composition of liver tissues of 14-day quail embryos has been proved. Additional addition to the diet of the mother tocopherol population at a dose of 20 g/tonn contributed to an increase in the percentage of palmitic (1,44 %; $p < 0,05$) and stearic (0,52 %; $p < 0,05$) acids in liver tissues embryos. Reducing the total content of mono- and polyunsaturated fatty acids in the liver of embryos of 14-day quail for an additional introduction into the diet of the breeding stock of vitamin E is accompanied by a significant increase in the ratio of the amount of saturated to the amount of unsaturated fatty acids (NLC / NNHC) by 10,8 % ($p < 0,05$). The ratio of ω -6/ ω -3 polyunsaturated fatty acids in yolk fertilized quail eggs is 15.3:1, whereas in the liver 14-day embryos 3.2–3.4: 1. There was a tendency to increase the share of ω -3 fatty acids (by 0,09 %) and decrease the share of ω -6 and ω -9 fatty acids in 0,97–1,07 % in the liver of quail embryos of the experimental group, resulting in the ratio of ω -6/ ω -3 polyunsaturated fatty acids was 5,3 % less than control.

Keywords: quail, fatty acids, yolk, liver, vitamin E.

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Improvement of the system of anti-rabies measures in Ukraine (p. 149–152)

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The complicated epizootic situation of rabies in Ukraine needed measures, among which one of the main is the oral immunization of wild carnivores, whose efficacy has been proved in experimental and in field trials. In order to improve the campaigns of oral vaccination of foxes against rabies, the authors of the group developed the Methodological recommendations "Planning, organization and implementation of oral immunization of carnivores against rabies". The recommendations take into account of the recommendations of the European Union, as well as features of implementation of the air distribution of

the vaccine with use of the method the recording of location with GPS-devices (Global Positioning System), which will improve the efficiency of oral vaccination of wild carnivores against rabies. The article describes of the peculiarities of the use of the device for the distribution of drugs in the solid dosage form "Avtovak" (number of doses, the width between the flight lines, the approximate speed of the aircraft), which is equipped GPS (GPS-Control Distribution Unit gen.4) with txt files, which in are further can be used to assess the effectiveness of the campaigns of the oral vaccination fox against rabies.

Keywords: rabies, wild carnivores, rabies vaccine, oral vaccination, air transport, GPS.

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Efficiency of application of phytopreparations against strains of *St. aureus*, *St. epidermidis* and *Ps. aeruginosa* (p. 153–156)

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The antibacterial effect of plant infusions on reference cryogenic reference strains has been studied. Recommended for the control of multidrug resistant strains. *St. aureus*: Eleutherococcus senticosus, pomegranate ordinary; *St. epidermidis*: Apes propolium; *Ps. aeruginosa*: Citrus sinensis. Tincture of Punica granatum had a bacteriostatic effect against all experienced microorganisms.

One of the problems of modern infectious pathology of animals and humans is the emergence of multiresistant strains of staphylococci, which are difficult to respond to antibiotic therapy and lead to severe soft tissue damage, complex surgical pathology. One of the promising directions of pharmacognosy is the search for alternative sources of antibacterial substances with an exhaustive resource of antibiotics of fungal origin. One of the promising directions of search is the use of plant raw materials of medicinal plants of official and non-clinical medicine. The tendency of a scientific search for scientists of the world in recent decades shows positive progress in this issue, reveals a promising range of plants of a number of families that are characterized by the content of certain active substances (phytoncides, saponins, alkaloids, glycosides, tannins, essential oils, embalming pitches etc.).

The results of the effectiveness of phytopreparations on *Staphylococcus aureus*, *Staphylococcus epidermidis* in vitro are presented. The antibacterial effect of herbal infusions has been established: *Eleutherococcus spiny*, *Eleutherococcus sedentechekiviy* and *Granat* ordinary polyresistant strains of microorganisms.

Keywords: microorganism growth suppression zone, anti-biotic resistance, plant infusions, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*.

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Comparison of sensitivity of transplantable cell cultures to canine coronavirusidae (p. 157–160)

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With the advent of the cell culture method, the diagnosis of viral infections has risen to a qualitatively higher level. Cultures of cells are widely used in cytogenetic, biochemical, molecular and various laboratory studies.

The article presents data on the indication of the field isolate of coronavirus of dogs on the territory of Ukraine, allocated in 2016 from the pathological material of a dead animal with characteristic clinical signs.

The work was carried out at the Faculty of Veterinary Medicine of the Zhytomyr National Agroecological University in the virology laboratory. All work on cell cultures was carried out in a specialized mini-box under ultraviolet radiation.

To isolate the viral isolate, a fragment of the intestine of the dog was used, after euthanasia, which was ill with coronavirus enteritis.

In the experiment, cell cultures were used: kidney hamster (VNK-21), rabbit kidney (RK-13) and kidney pig (SPEV)

It was found that for incubation of virus-isolating isolates, the most sensitive are freshly transplanted, after 24 hours of incubation, with at least 70 % and no more than 80 % of the cell monolayer. Control over the number of cells introduced during transplanting was carried out using a chamber with a grill Goryaev. The most optimum was the sown concentration from $1,0 \times 10^5$ to $2,0 \times 10^5$ cl./ml Cultivation of the cross-over lines of cell cultures was carried out using a nutrient medium consisting of medium 199 and DMEM – 90 %, fetal bovine serum – 10 %, and antibiotics. The support medium for the infected cell culture was as nutritious as it was, without serum alone. Cultivations were performed according to generally accepted techniques, evaluating the cytopathogenic effect on the system of four pluses under an inverted microscope, compared with control.

Before conducting cultural studies, the monoinfection was confirmed by the ELISA method.

It was determined that the cytopathogenic effect of the virus was observed 72 hours after infection, the more intensive process of cell destruction was recorded in the line of cultures of VNK-21 cells, where at 5–6 days almost always stabilized 90–100% cytopathogenic action of

the virus, and the titre of infectious activity increased with each new passage of viral material $1.2 \lg TCD_{50}/cm$, after the third passage rose to $3,7 \pm 0,03 \lg TCD_{50}/cm$, and after the fifth – increased to $4,8 \pm 0,04 \lg TCD_{50}/cm$.

Keywords: canine coronavirusidae, field isolate, cell culture, cultural properties, cytopathogenic effect, SKES cell line, BHK-21 cell line, RK-13 cell line.

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Improvement of a nutrient medium by adding copper nanoparticles for clostridium cultivation (CuNP) (p. 161–168)

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The article presents results on the biotechnology of the production of modern effective veterinary immunobiological means (VIM) related with the increase in the volumes of bacteriological mass of pathogenic microorganisms to use them as specific antigens. There is a need in optimization of existing and development of new, cost-effective nutrient media for the cultivation of anaerobic strains of pathogens. Current which nanobiotechnologies may be use for this purpose. Determination of the peculiarities of metals NP influence on pathogenic microorganisms contributes to new perspectives of their application in biotechnology for the production of specific preventive means for obtaining large volumes of bacterial mass of pathogenic agents with their subsequent inactivation and use in the biotechnology of VIM production.

After CuNP addition to the liquid culture media at certain concentrations for anaerobes cultivation, we registered pronounced biological activity and positive effect on the growth and multiplication of the *C. septicum* strain "Cherkaskiy-97". The revealed results confirmed stimulating effect of CuNP on the growth and reproduction processes of *C. septicum* in concentration within 0.1–0.0031 mg/ml with the exponential phase of Clostridium in 24 hours. Within exponential phase of Clostridium growth and multiplication volumes of bacterial mass of the pathogen increased in 1,12–1,83 times significantly higher ($p < 0,001$), in comparison with the control. The minimal stimulating concentration of CuNP in the liquid nutrient media composition was 0,025 mg/ml. The presence of CuNP in this concentration showed the best stimulative effect on the Clostridium proliferation, ensuring the highest yield of the *C. septicum* bacterial mass, which was higher by 44,7 % ($p < 0,001$), compared with the control.

In 36 hours of *C. septicum* cultivation, there was a phase of bacterial cell death, as the bacterial mass volume decreased by 19,1 % ($p < 0,005$),

and in 48 hours cultivation, the quantitative content of Clostridium significantly decreased by 22,3 % ($p < 0,001$), compared with the previous parameters.

It was confirmed that *C. septicum* cultivation for 24 hours in nutrient media with CuNP within stimulant concentrations provided a complete technological approach for increasing the concentration of antigens without decantation (by fusing a part of the liquid fraction of the antigen to increase its concentration) and obtaining a vaccine in full volume with improved quality by preservation of the total number of soluble antigens against *C. septicum* metabolites, which results in the cost reduction of vaccine preparations.

Keywords: nutrient medium for anaerobes cultivation, *C. septicum*, copper nanoparticles, concentration of CuNP, bacterial mas.

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Isolation and identification of epizootic culture *Pasteurella multocida* subspecies *gallicida* strain SA-18 (p. 169–173)

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In the study of the etiopathogenesis of infectious pathology in 3-month-old vivarium chickens, proceeding according to the classical type without relay agent transmission, it was established that the etiophactor is *P. multocida*. The disease was characterized by septic pathogenesis, acute course with a lethal outcome, without pathognomonic postmorbidity changes. One of the diseased chickens was killed with a diagnostic purpose in the agonized state and standard pathological material was selected. As a result of bacteriological study, we isolated an epizootic variant of the *Pasteurella* identified by the complex of features as *P. multocida* sb. *gallicida* strain SA-18, which induced lethal pasteurellosis in vivarium chickens. The culture of the pathogen was pathogenic and highly virulent for laboratory animals, possessed cardinal biological properties characteristic for the species and subspecies, and at the

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same time gave a high yield of prokaryotes in stationary cultivation on commonly used nutrient media. Culture *P. multocida* sb. *gallicida* strain SA-18 was found to be pathogenic and highly virulent for laboratory animals – white mice, antlers, rabbits and 3-month-old chicks, with a biological study according to generally accepted methods. For all laboratory animals, experimental pasteurellosis was an unconditional lethal infection, which proceeded sharply, the prognosis with respect to life was negative, leading sign of pathogenesis was sepsis. That is, infectious pathology proceeded according to the classical type of infectious process. However, in morlyans, sepsis was also accompanied by pneumoenteric disease with a lethal outcome, that is, pathogenesis had a transient nature and contained signs of classical and factor types of the infectious process of pasteurellosis. Isolated culture on a set of biological properties proved to be a promising model for the creation of inactivated bacterin in the polyvalent antipasteurase vaccine, covering the entire antigenic spectrum of the field pathogen circulating in native conditions. The culture of the pathogen must be studied in relation to its suitability for the production of vaccine anti-pasteurized biologics. It is necessary to study the immunogenicity of *P. multocida* sb. *gallicida* strain SA-18 in the form of inactivated bacterium with and without adjuvant, kinetics of chemical inactivation of prokaryotes and the potential of accumulation of bacterial mass of pasteurells for suspension culture in a bioreactor.

Keywords: epizootic culture, *P. multocida* sb. *gallicida*, identification, cardinal characteristics, pathogenicity, virulence, sepsis.

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Microbiological characteristics of probiotic culture *Aerococcus viridans* strain BI-07 (p. 174–177)

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In the study of qualitative and quantitative composition of intestinal microbiota of 3-monthly clinically healthy broiler chickens that were fattened in poultry farming conditions, the culture of indigenous non-resident aerococci possessing valuable probiotic potencies was isolated by routine bacteriological methods. The microbiological characteristics of isolated aerococcus were scanned using conventional bacteriological methods for streptococci and based on an analysis of cardinal biological properties using the Bergi determinant established the species belonging of an isolated prokaryote culture – *Aerococcus viridans*. The culture was deposited as a production strain BI-07, for use as a probiotic in the symbiotic preparation Subaerin. The strain possesses typical for the species properties: gram-positive aerococcus,

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immobile, encapsulant, facultative anaerobic, chemoorganotroph with oxidative metabolic type, saprophyte, non-resident prokaryotes of cover tissues with high colonization potency and antimicrobial antagonism, producing biologically active physiologically useful substances.

Keywords: *A. viridans* strain BI-07, probiotic, indigenous culture, biologically active substances, microbiological properties.

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Improvement of serological diagnostics of poultry methanemovirus infection (p. 178–182)

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An epizootological survey of metapneumovirus infection prevalence (MPVI) was conducted at poultry enterprises of Kharkiv district among "BIG-6" and "BUT-8" turkeys aged 4–480 days (imported from Germany and Hungary), "Large White" turkeys aged 70 days, "Birkivska Barvysta" and "Hisex Brown" hens aged 250 and 180 days respectively. Using ELISA-based serology tests ("IDEXX" test-kit, USA), it was demonstrated that 78.0 % of the turkeys (antibody titers 3776–27869), 100 % of the "Birkivska Barvysta" (4997–10414) and 0 % of the "Hisex Brown" hens exhibited a positive reaction to MPVI. At Luhansk NAU the development of a domestic ELISA test-system for the diagnosis of MPVI in hens and turkeys is being conducted. To receive diagnostic sera it was developed an immunization scheme for intact chickens and turkeys also it was obtained two series of Hyperimmune serum with antibody ELISA titer 1:1700 in chickens and in turkeys 1:2800 (IDEXX). The sera were stored at the minus 20 °C temperature and in a freeze-dried state; technological characteristics of this system have been determined and compared to its imported analog. The 100 % correlation dependence is observed according to the diagnosticum data, it means that, the sera of the investigated birds, which do not have antibodies to this disease, are not fixed in both sets and vice versa, the serums with the presence of protective antibody titers to this disease - are detected by two systems used to test. The domestic test system is much cheaper, in comparison with the foreign analogues. It is available to veterinary medicine laboratories and is also competitive and import-substituting. The prospect of further research in this area is the introduction of a domestic ELISA test system to the MPVI diagnosis in the veterinary medicine laboratory in Ukraine.

Keywords: epizootiology, survey, disease, turkeys, hens, ELISA, test-system.

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