*14. Akhondian Javad. Effect Nigella savita (black cumin seed) on intractable pediatric seizures. / J. Akhondian, A. Parsa, H. Rachsande // Med. Sci. Monit. – 2007. – Dec.; 13 (12). – P.137.*

*15. Lutzner H. Aktive Dietetik. – Hippokrates Verlag, Stuttgard, 1993. – 316 s.*

*16. Farshad Roghani Dehkozdi. Antihypertensive effect of Nigella Savita seed extract in patients with mild hypertension / F. R. Dehkozdi; A. F. Kamkhah // Braz. J. Med. Biol. Res. 2006. – Vol. 39 (4).– P. 421-429.*

*17. Keyhanmanes Rana. The effect of thymoquinone, the main constituent of Nigella Savita on trachel responsiveness and white blood cell count in lung lavage of sensitized guinea pigs / R. Keyhanmanes, M. H. Boskabady, M. J. Elsamiaseh [et al.] // J. ethnopharmacol. – 2009. – Vol. 126 (1). – P. 102-107.*

Надійшла до редакції 10.11.2014

**УДК: 615.322:582.794.1:616-085**

**О. І. Волошин, В. Л. Васюк**

**ЧОРНУШКА ПОСІВНА (NIGELLA SAVITA) – ПЕРСПЕКТИВИ ВИКОРИСТАННЯ В ПРОФІЛАКТИЧНІЙ МЕДИЦИНІ (Огляд літератури)**

**Ключові слова:** поліморбіність, профілактична медицина, лікарські рослини, чорнушка посівна, застосування.

В оглядовій статті наведені історичні відомості, ботанічні особливості, хімічний склад, фармакологічні властивості та спектр застосування насіння чорнушки посівної в експериментальній, клінічній медицині та перспективи профілактичного використання в сучасних умовах в Україні з урахуванням поліморбідності пацієнтів.

**А. И. Волошин, В. Л. Васюк**

**ЧЕРНУШКА ПОСЕВНАЯ (NIGELLA SAVITA) – ПЕРСПЕКТИВЫ ИСПОЛЬЗОВАНИЯ В ПРОФИЛАКТИЧЕСКОЙ МЕДИЦИНЕ (Обзор литературы)**

**Ключевые слова:** полиморбидность, профилактическая медицина, лекарственные растения, чернушка посевная, использование.

В обзорной статье приведены исторческие данные, ботанические особенности, химический состав, фармакологические свойства и спектр использования семян чернушки посевной в экспериментальной, клинической медицине и перпективы профилактического использовния в современных условиях в Украине с учетом полиморбидности пациентов.

**O. I. Voloshyn, V. L. Vasiuk**

**NIGELLA SAVITA – THE PROSPECTS OF USING IN PREVENTIVE MEDICINE (Literature review)**

**Keywords:** polymorbidity, preventive medicine, medicinal herbs, Nigella sativa, application.

In a review article given historical information, botanical characteristics, chemical composition, pharmacological properties and range of applications of Nigella sativa in experimental, clinical medicine and prospects of prophylactic using it's in Ukraine in contemporary conditions considering of patient's polymorbidity.

**UDC: 615.322:615.454.2:61.65-002:616-8**

# EVALUATION OF THERAPEUTIC ACTION OF SUPPOSITORIES WITH PHYTOEXTRACTS REGARDING THE RESULTS OF MORPHOLOGICAL STUDY OF PROSTATE

■ **G.V. Zaychenko, MD, prof., head. dep. of Clinical Pharmacology IPPQI**
**E.O. Soldatova, applicant of dep. of Clinical Pharmacology IPPQI**
**V.F. Ostashko, PhD, docent of dep. of Clinical Pharmacology IPPQI**
**Yu.B. Lariyanovska, PhD, senior researcher of Central Research Laboratory**

■ ***National University of Pharmacy (Kharkiv)***

The chronic prostatitis is the disease occurring mainly in young and middle aged men. At lifetime, about 30% of men endure chronic or acute prostatitis. Prevalence rate of chronic prostatitis among general population equals about 9% and causes 30 to 70 % of all visits to doctors by men in different countries [3, 5, 8].

For the first time the prostate gland pathology was given precise morphological description by Verdes in 1838, and in 1906 those data were supplemented and updated by H.H. Young and coauthors [4, 12]. The present understanding of chronic prostatitis pathogenesis considers morphological and functional prostate abnormalities [1].

The literature analysis shows perspective for creation of preparations based on Phytoextracts [2, 7, 9, 10, 11], and the domestic urology requires an effective modern preparation for chronic prostatitis treatment.

**The objective of the study.** Evaluation of therapeutic action of new prostate combined structure protectors in the form of suppositories based on phytocomplex of dried saw palmetto fruit extract (***fructus Serenoa repens***), nettle roots (***radices***

***Urtica dioica***) and pumpkin seeds (***semenis Cucurbita pepo***), based on the results of morphological studies of medicinal preparations after treatment of experimental prostatitis.

**Materials and methods**

Prototypes of suppositories, developed at the Department of Drug Technology factory of the National University of Pharmacy under the supervision of Doctor of Pharmacy A.A. Ruban have been taken for the object of our research.

We have studied two types of suppositories with the same phytocomposition and different suppository base:

The first type – suppositories comprising: 0.25 g of dry saw palmetto fruit extract, 0.25 g of dry nettle root extract, 0.25 g of dry pumpkin seeds extract and fat – to suppository weighing 2.8 g.

The second type – suppositories comprising: 0.25 g of dry saw palmetto fruit extract, 0.25 g of dry nettle root extract, 0.25 g of dry pumpkin seeds extract and PEO-9 – to suppository weighing 2.8 g.

The comparative preparation – analogous of medical appointment – is the combined phytopreparation – Prostaplant Forte (forte Prostaplant ("Dr. Willmar Schwabe GmbH und Co", Germany) in capsules, 1 capsule contains 160 mg of dry saw palmetto fruit extract and 120 mg of standardized nettle root extract.

The research has been conducted on mature white nonlinear male rats, weighing 290-300 g, bred in vivarium of Central research laboratory of the National University of Pharmacy (Kharkiv).

Suppositories with PEO- or fat-based phytoextracts have been administered rectally at a dose (as of extract total) of 600 mg/kg; comparative preparation, Prostaplant forte, has been administered intragastrically at a dose of 35 mg/kg, calculated considering the rate of species stability based on the daily dosage for humans [6].

Histological structure of dorsolateral part of prostate (area near the entrance of ductuli eferentes, prostatic part of the urinary duct) has been examined at light-optical level.

**Results and discussion**

In intact control group of animals, numerous terminal branches of prostatic glands (acini), ductuli eferentes,

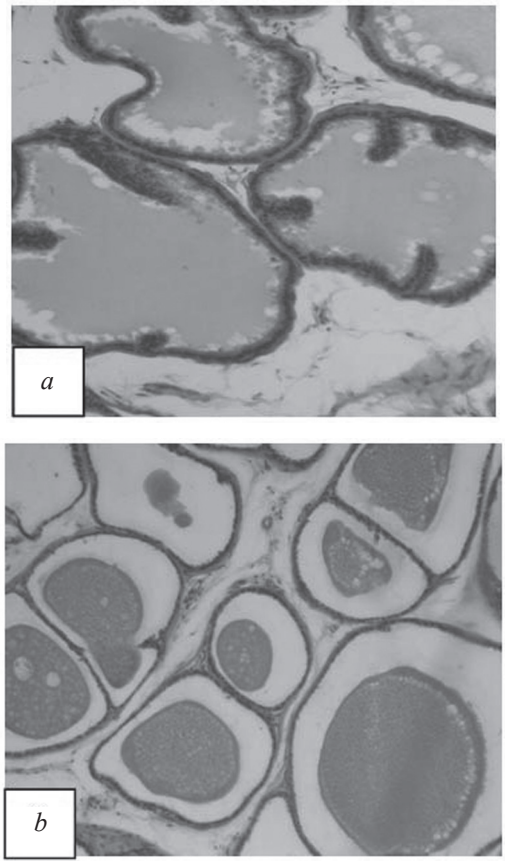


*Fig. 1. Dorsolateral part of intact rat prostate. Normal state of prostatic glands. Haematoxylin and eosin. x200.*

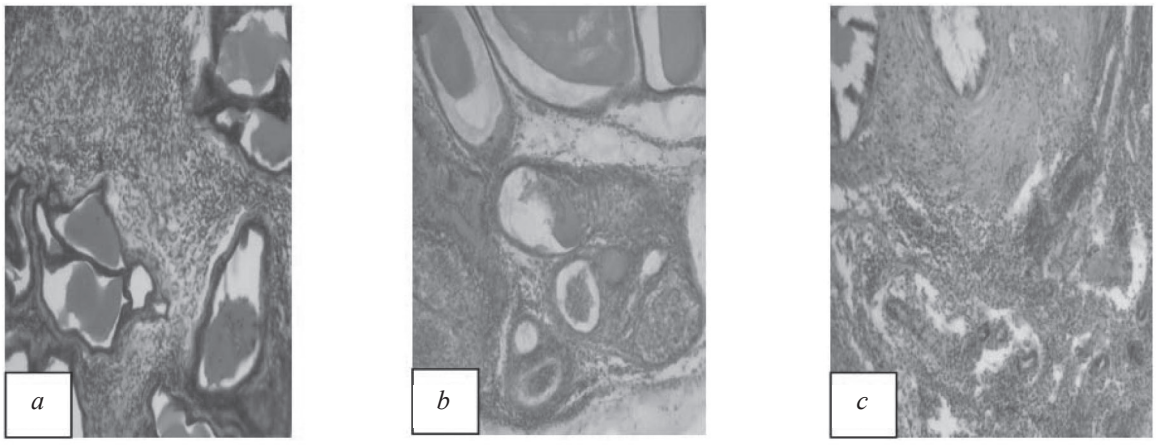


*Fig. 2. Signs of prostatitis in dorsolateral part of rat prostate after rectal administration of turpentine and dimexidum mixture: significant productive inflammatory interacinal reaction (a), around the main parts of excretory ducts of glands (b), in tissue at urethral duct (c). Haematoxylin and eosin. x100.*

sometimes part of urinary passage, have been microscopically identified. Epithelial lining of part of acini was covered with high cubic cells, gathered in small rare folds and contained light eosinophil secretions in the lumen. Other acini of prostatic glands in this area were lined with low cubical epithelium. There were no folds in lepidic tissue of acini walls; their size was moderately varied. The secretion in the lumen was dense, granular, eosinophil. Acini of glands were located both

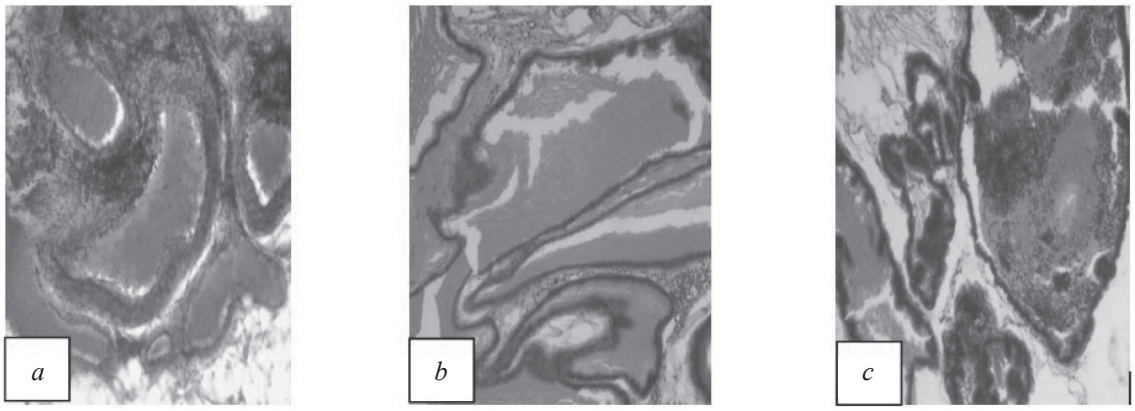


*Fig. 3. Signs of prostatitis in dorsolateral part of rat prostate after rectal administration of turpentine and dimexidum mixture: inflammatory reaction and homeostasis in external tissue of prostate (a) clearly prolated acini, interacinal cellular infiltrates (b), cellular detritus in acini lumen (c). Haematoxylin and eosin. x100.*

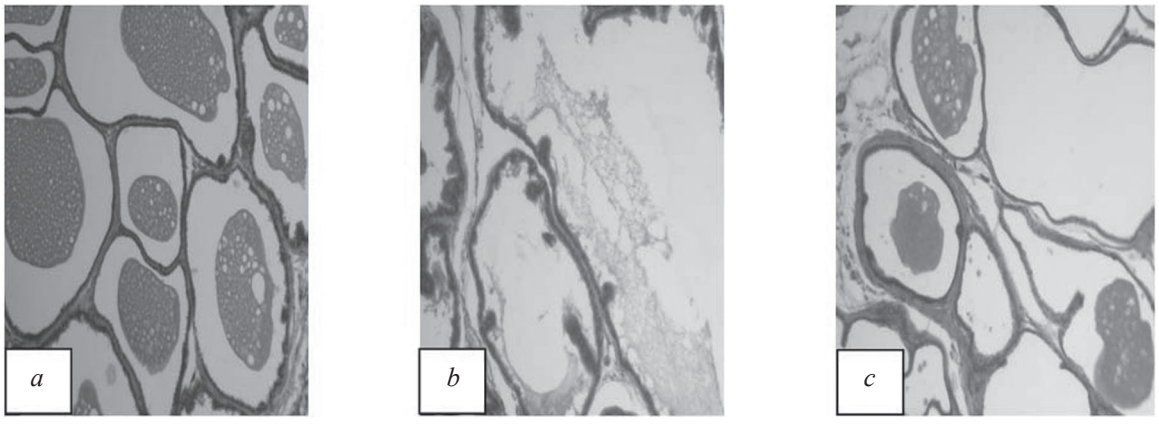


*Fig. 4. Dorsolateral part of rat prostate after treatment of experimental turpentine and dimexidum prostatitis by administering suppositories with PEO-based phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds: normal state of prostatic glands (a-b), slight increase of part thereof (b-c). Haematoxylin and eosin. x100.*

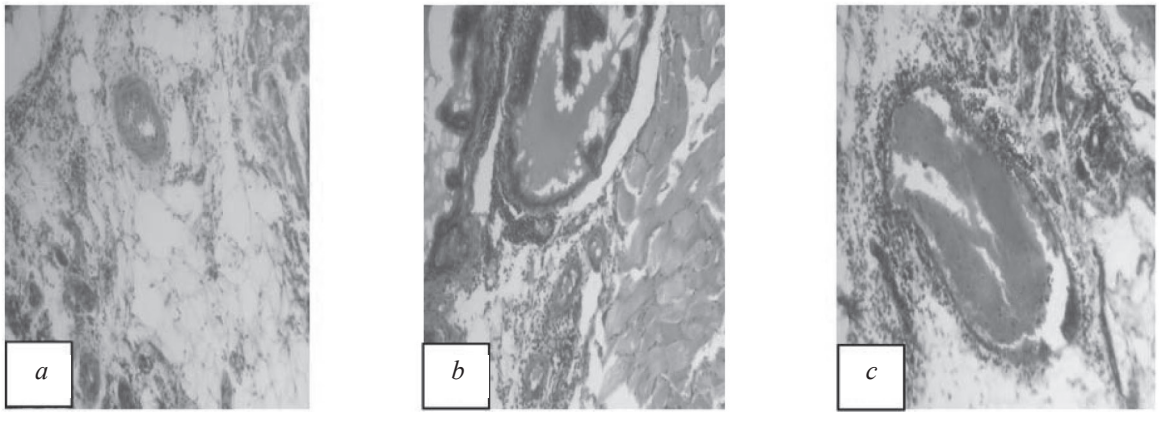


*Fig. 5. Dorsolateral part of rat prostate after treatment of experimental turpentine and dimexidum prostatitis by administering suppositories with PEO-based phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds: fine-local cellular infiltration in external tissue of prostate (a) interacinal stroma (b) and perivascular (c). Haematoxylin and eosin. x100.*

separately and in small groups.

Around some acini, a narrow strip of smooth muscle tissue was well seen. Loose tissue (stroma) between acini glands was moderate, locally having visible small blood vessels of venous type. Transverse profiles of main parts of the excretory ducts of prostate gland were often found. There were several rows of cells lining the walls (Fig. 1).

Double rectal administration of turpentine with dimexidum caused distinct hemodynamic and inflammatory disorders in the studied area of prostate in most rats. In interacinal stroma, around the main parts of excretory ducts near ductuli eferentes, well-marked infiltrates containing eosinophilic cells with mixed lymphocytes and histiocytes were seen. There were signs of productive inflammation in external tissue of prostate. Abrupt enlargement and plethora of blood vessels of different caliber was noted, often blood stasis and perivascular round-cell infiltrates. Acini of prostatic glands were often clearly prolated, sometimes deformed, secretion was often thickened. Accumulation of cellular detritus could be seen in lumen of some acini. All those signs could be regarded as stress of functional state of glands (Fig. 2, Fig. 3).

Introduction of suppositories with PEO-based phytoextracts under research prevented or significantly reduced severity of inflammation signs of interacinal stroma, external tissue of prostate, around excretory ducts of glands and ductuli eferentes relatively to control disease. There were no destructive changes of the prostatic glands acini; only a slight increase of some of them was noted. Local hemodynamic disturbances were less distinct (Figure 4, Figure 5).

After rectal administration of suppositories with fat-based phytoextracts, positive effect on the state of researched areas of rats prostate was also noted. Structural integrity of acini was persisted, their size varied moderately. Significance of inflammation was also reduced relatively to control disease, however, compared to PEO-based phytosuppositories, that was greater (Figure 6, Figure 7).

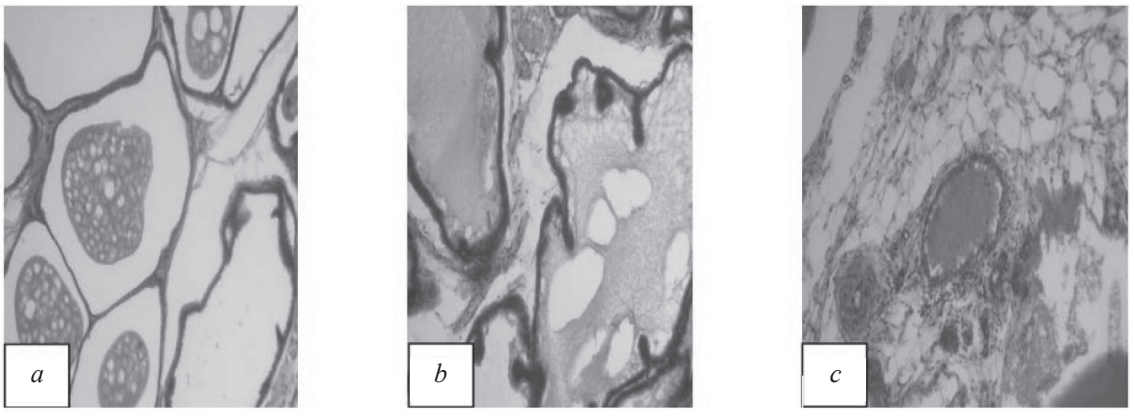


*Fig. 6. Dorsolateral part of rat prostate after treatment of experimental turpentine and dimexidum prostatitis by administering suppositories with fat-based phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds: moderate increase of the fully functional acini of prostatic glands (a-b), fine perivascular infiltrate (c). Haematoxylin and eosin. x100.*

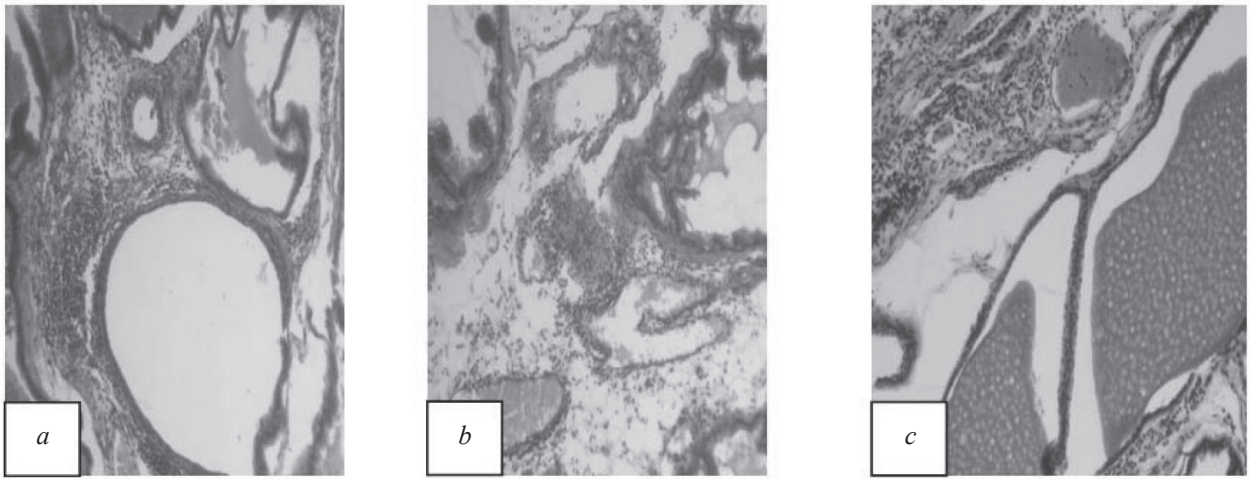


*Fig. 7. Dorsolateral part of rat prostate after treatment of experimental turpentine and dimexidum prostatitis by administering suppositories with fat-based phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds: of different inflammation level in interacinal stroma in different zones of the researched part (a, c – rather expressive, b – moderate). Haematoxylin and eosin. x100.*

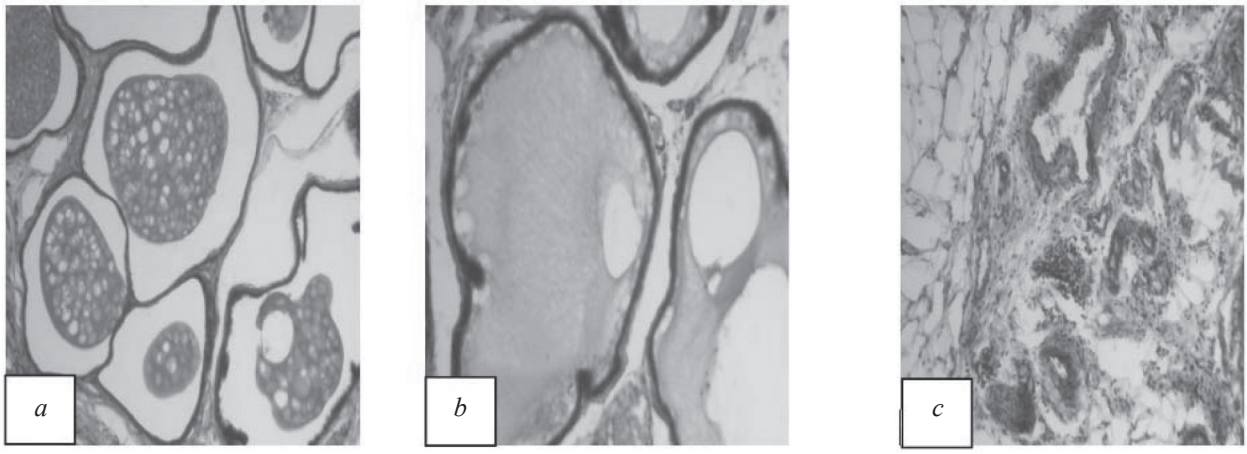


*Fig. 8. Dorsolateral part of prostate of rat, which, on the background of turpentine prostatitis, was administered with Prostaplant forte: moderate increase of functionally normal acini of prostatic glands (a-b), no vascular reaction, significant decrease of inflammatory reaction in external tissue of prostate (c). Haematoxylin and eosin. x100.*

Introduction to laboratory animals of Prostaplant forte preparation on the background of turpentine prostatitis resulted in normalization of structural and functional condition of the vast majority of prostate glands in the studied department of prostate in all rats. Inflammation processes were significantly reduced at all problematic lobe areas. Blood vessels were moderately plethoric; no perivascular infiltrates (Figure 8, Figure 9).

At analysis of morphological studies results, it could be concluded that two time rectal administration of turpentine and dimexidum mixture caused pathological changes in the prostate gland in rats on the 13$^{th}$ day after the first day of the agent introduction (particularly in the area adjacent to the rectum anterior wall), occurrence of subacute inflammation, destructive changes in a number of end sections of prostate glands, functional stress of other glands.

Suppositories with PEO- and fat-based Phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds, administered to laboratory rats on the background of turpentine prostatitis, developed under rectal administration of turpentine and dimexidum mixture, significantly reduced inflammatory and vascular reactions, prevented destructive changes of prostatic glands acini. PEO-based phytosuppositories were somewhat more effective than fat-based phytosuppositories as of their anti-inflammatory action.

PEO-based phytosuppositories were better than prostaplan forte comparative preparation, and fat-based phytosuppositories were almost equal to that, as of expressive positive impact on morphological state of prostate gland.

**Conclusions**

**Summarizing the results of this research phase, the following conclusions can be made:**

**1. At prostatitis model caused by rectal administra-**

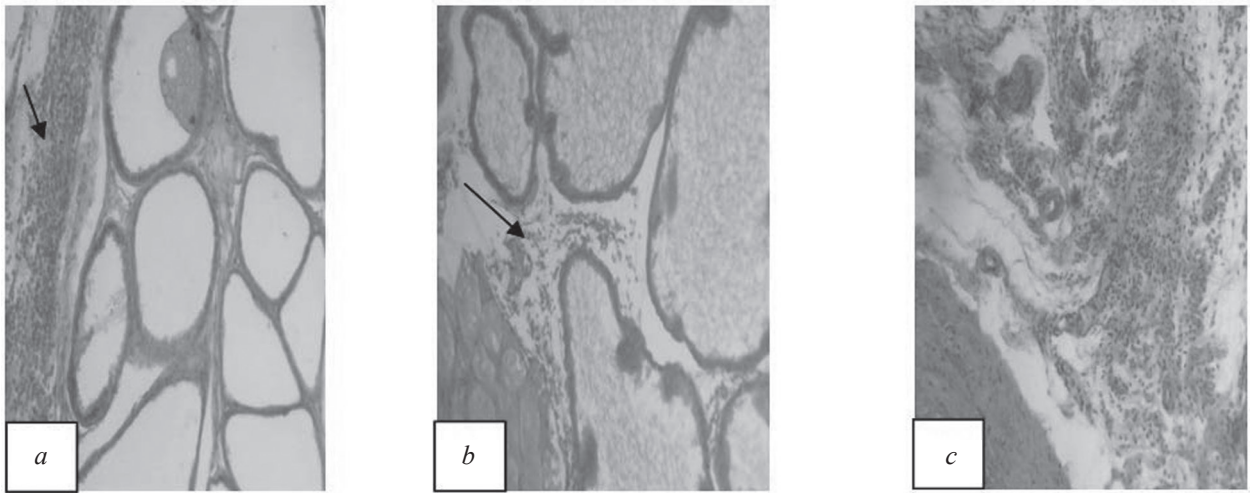


*Fig. 9. Dorsolateral part of prostate of rat, which, on the background of turpentine prostatitis, was administered with Prostaplant forte: moderate cellular infiltration in interacinal stroma (a-b), around the wall of ductuli eferentes (c). Haematoxylin and eosin. x100.*

**tion of turpentine and dimexidum mixture of suppositories of PEO-based and fat-based phytoextracts of saw palmetto fruit, nettle root and pumpkin seeds at a dose of 600 mg / kg (the total extracts), have expressed prostate protective effect: prevent development of inflammation, vascular reaction and destruction of Dorsolateral part of prostate glandular tissue.**

**2. As of expressiveness of prostate protective action, suppositories with fat-based phytoextracts do not have probable distinctions with suppositories with PEO-based Phytoextracts as of all the studied parameters.**

**3. Suppositories with fat-based and PEO-based phytoextracts, in large, are no worse than Prostaplant forte comparative preparation as of their prostate protection; as of their positive impact on morphological state of the gland, PEO-based phytosuppositories are better than the comparative preparation.**

## *References*


*1. Boiko N.I. Prostatitis. New take on the old problem/ N.I. Boiko. // Urology, 2011.– Vol. 15. – N 1. – P. 34-40.*

*2. Compendium 2013 – medicinal preparations [under the editorship of V.P. Kovalenko]. – K.: Morion, 2013. – 2360 p.*

*3. Kulchavenya E.V. Prostatitis: diagnostics and treatment: guidance/ E.V. Kulchavenya, A.I. Neymark. – M.:GEOTAR-Media, 2010. – 236 p.*

*4. Prostatitis [under the editorship of P.A. Shcheplev]. – M.: MEDpress-inform, 2007. – 224 p.*

*5. Rzayev R.S. Factors of chronic bacterial prostatitis development in the modern context / R.S. Rzayev // Fund. res. – № 9, 2013.– P. 122-126.*

*6. Yu. R. Rybolovlev Dozing of preparations for mammals as of biological activity constants / Yu.R. Rybolovlev, R.S. Rybolovlev // Rep. AS of USSR. – 1979. – Vol. 247. – № 6. – P. 1513-1516.*

*7. Smirnov V.A. Medicinal therapy of chronic prostatitis / V.A. Smirnov // PHARMindex-Practic. – № 10. – 2006. – P.46-55.*

*8. Urology: course book / [under the editorship of S.H. Al-Shukri, V.N. Tkachuk]. – 2012. – 480 p.*

*9. A comprehensive review on the stinging nettle effect and efficacy profiles. Part II: urticae radix [Chrubasik JE, Roufogalis BD, Wagner H, Chrubasik S.] // Phytomed. – 2007. – N 14 (7-8). – P. 568-579.*

*10. A review of animal and human studies for management of benign prostatic hyperplasia with natural products: perspective of new pharmacological agents. [Azimi H, Khakshur AA, Aghdasi I, Fallah-Tafti M, Abdollahi M.] // Inflamm Allergy Drug Targets. – 2012.– N 11 (3). – P. 207-221.*

*11. Ejike C.E. Inhibition of the experimental induction of benign prostatic hyperplasia: a possible role for fluted pumpkin (Telfairia occidentalis Hook f.) seeds / C.E. Ejike, L.U. Ezeanyika // Urol. Int.– 2011. – N 87 (2).– P. 218-224.*

*12. Young H.H. Chronic prostatitis / H.H. Young, J.T. Gereghty, A.R. Stevens // Johns Hopkins Hospital Rep. – 1906. – N 3.– P. 271-384.*


Received 13.10.2014

**УДК 615.2:577.127.4.**

**Г. В. Зайченко, Є. О. Солдатова, В. Ф. Осташко, Ю. Б. Лар'яновська**

**ОЦІНКА ЛІКУВАЛЬНОЇ ДІЇ СУПОЗИТОРІЇВ З ФІТОЕКСТРАКТАМИ ЗА РЕЗУЛЬТАТАМИ МОРФОЛОГІЧНОГО ВИВЧЕННЯ ПРОСТАТИ**

**Ключові слова:** скипідарний простатит, супозиторії, фітоекстракти, гістологічна структура.

Супозиторії з фітоекстрактами плодів пальми сабаль, кореня кропиви і насіння гарбуза на поліетіленоксідній (ПЕО)- і жировій основі, які вводили лабораторним щурам на фоні хронічного простатиту, що виник в результаті ректального введення скипідарно-дімексидної суміші, зменшували прояви запальної та судинної реакцій, попереджали деструктивні зміни ацинусів простатичних залозок. По виразності протизапальної дії фітосупозіторіі на ПЕО-основі були трохи більш ефективними, ніж фітосупозіторіі на жировій основі. По виразності позитивного впливу на морфологічний стан простати фітосупозіторіі на ПЕО-основі перевищують препарат порівняння Простаплан-форте, а фітосупозіторії на жировій основі практично не поступаються йому.

**А. В. Зайченко, Е. А. Солдатова, В. Ф. Осташко, Ю. Б. Ларьяновская**

**ОЦЕНКА ЛЕЧЕБНОГО ДЕЙСТВИЯ СУППОЗИТОРИЕВ С ФИТОЭКСТРАКТАМИ ПО РЕЗУЛЬТАТАМ МОРФОЛОГИЧЕСКОГО ИЗУЧЕНИЕ ПРОСТАТЫ**

**Ключевые слова:** скипидарный простатит, суппозитории, фитоэкстракты, гистологическая структура.

Суппозитории с фитоэкстрактами плодов пальмы сабаль, корня крапивы и семян тыквы на полиэтиленоксидной (ПЭО)- и жировой основе, которые вводили лабораторным крысам на фоне хронического простатита, возникшего в результате ректального введения скипидарно-димексидной смеси, отчетливо уменьшали проявления воспалительной и сосудистой реакций, предупреждали деструктивные изменения ацинусов простатических железок. По выраженности противовоспалительного действия фитосупозитории на ПЭО-основе были несколько более эффективными, чем фитосупозитории на жировой основе. По выраженности положительного влияния на морфологическое состояние простаты фитосупозитории на ПЭО-основе превышают препарат сравнения Простаплан-форте, а фитосупозитории на жировой основе практически не уступают ему.

**G.V. Zaychenko, E.O. Soldatova, V.F. Ostashko, Yu.B. Lariyanovska**

**EVALUATION OF THERAPEUTIC ACTION OF SUPPOSITORIES WITH PHYTOEXTRACTS REGARDING THE RESULTS OF MORPHOLOGICAL STUDY OF PROSTATE**

**Keywords:** turpentine prostatitis, suppositories, phytoextracts, histological structure.

Suppositories with polyethylene-oxide (PEO)- and fat-based phytoextracts of saw palmetto fruit, nettle root, pumpkin seeds, administered to laboratory rats on the background of chronic prostatitis, resulting from rectal administration of turpentine and dimexidum mixture, reduce inflammatory, and vascular reactions, prevent destructive changes of prostatic glands acini. As of anti-inflammatory action, PEO-based phytosuppositories are somewhat more effective than fat-based phytosuppositories. As of positive impact on the morphological state of prostate, PEO-based phytosuppositories are better than Prostaplant forte comparative preparation, and fat-based phytosuppositories are almost equal to it.