

О. Гаділія, асп., М. Тимошенко, канд. біол. наук, К. Дворщенко, канд. біол. наук, Л. Остапченко, проф.
КНУ імені Тараса Шевченка, Київ

ВПЛИВ НИЗЬКОМОЛЕКУЛЯРНОЇ ОРГАНІЧНОЇ СПОЛУКИ НА СИСТЕМУ АНТИОКСИДАНТНОГО ЗАХИСТУ СЛИЗОВОЇ ОБОЛОНКИ ШЛУНКА В УМОВАХ ЕТАНОЛ-ІНДУКОВАНОГО УРАЖЕННЯ ШЛУНКА У ЩУРІВ

Було досліджено профілактичний ефект низькомолекулярної органічної сполуки на ерозивно-виразкові ураження в слизовій оболонці шлунка щурів, викликані етанолом. Встановлено, що профілактичні ін'єкції цієї речовини в дозі 1 мг/кг ефективно захищали шлункові уражень, викликані етанолом. Сполука ефективно відновила про-/антиоксидантну рівновагу шляхом зменшення інтенсивності перекисного окислення ліпідів у слизовій оболонці шлунка щурів після введення етанолу та підвищення супероксиддисмутазної, каталазної активності та активності іглутатинової системи.

Ключові слова: етанол-індуковані ураження, перекисне окислення ліпідів, низькомолекулярна органічна сполука.

О. Гаділія, асп., М. Тимошенко, канд. біол. наук, К. Дворщенко, канд. біол. наук, Л. Остапченко, проф.
КНУ імені Тараса Шевченка, Київ

ВЛИЯНИЕ НИЗКОМОЛЕКУЛЯРНОГО ОРГАНИЧЕСКОГО СОЕДИНЕНИЯ НА СИСТЕМУ АНТИОКСИДАНТНОЙ ЗАЩИТЫ СЛИЗИСТОЙ ОБОЛОЧКИ ЖЕЛУДКА В УСЛОВИЯХ ЭТАНОЛ-ИНДУЦИРОВАННЫХ ПОРАЖЕНИЙ ЖЕЛУДКА У КРЫС

Было исследовано профилактический эффект низькомолекулярного органического соединения на эрозивно-язвенные поражения в слизистой оболочке желудка крыс, вызванные этанолом. Установлено, что профилактические инъекции этого вещества в дозе 1 мг/кг эффективно защищали желудок от поражений, вызванных этанолом. Соединение эффективно восстановило про-/антиоксидантное равновесие путем уменьшения интенсивности перекисного окисления липидов в слизистой оболочке желудка крыс после введения этанола и повышение супероксиддисмутазной, каталазной активности и активности глутатионовой системы.

Ключевые слова: этанол-индуцированные поражения, перекисное окисление липидов, низькомолекулярное органическое соединение.

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L. Gorobets, PhD
Taras Shevchenko National University of Kyiv, Kyiv,
O. Kovalchuk, PhD Student
National Museum of Natural History at the National Academy of Sciences of Ukraine, Kyiv,
L. Rekovets, D.Sc, Prof.
Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland

VERTEBRATES FROM THE METHOLITHIC SITE LASPI VII (CRIMEA, UKRAINE)

The article deals with the results of studying the remains of vertebrates from the Mesolithic site Laspi. It is established that a relatively small taxonomic diversity is inherent to this locality; it is mainly represented by four basic species: Great Bustard, Wels catfish (recently became extinct in the Crimea), Zander and the European hare, and four other species that have seemingly been hunted occasionally, as their bones are present, but few: Grey Partridge, Spotted Crane, European hamster and European hedgehog. In those days the basis of the local people's ration was bustard, and the successful hunting for this bird was probably the reason for the Mesolithic people to stop on this territory. Analysis of species diversity suggests that the animals were hunted in the winter. It is established that the rivers of the region, destroyed by an earthquake in 1790, were deep enough for catfish to live there.

Key words: mesolit, Crimea, vertebrates.

Introduction: In the territory of Ukraine, as well as in many other regions of the Palearctic, formation of the modern climatic zones with species richness close to the modern one began during the Mesolithic. Research into the history and trends of wildlife is extremely important for understanding the anthropogenic transformation of ecosystems. It is not possible without studying fossils. The historical aspect of description of the animal world is a basis for understanding the real ties that bind the living world into a single functioning system [10]. Information about findings of the fossil vertebrates, with their careful studying and interpretation, is rather important.

Taxonomic richness of the Crimean peninsula is much higher than that of the neighboring areas due to the great diversity of terrain and climate. The main game animals in the mountainous part of the peninsula were wild boar (25% of bones from archaeological sites belonging to this species), roe deer (20%), red deer (14%), and also rabbit (10%). Saiga and carnivorous mammals were hunted much less frequently (5% and 10%, respectively). Bones of marine mammals (seals and dolphins) were found in some Crimean localities, which are remote from the sea (Zamil-Koba and Fatma-Koba) [2].

At the end of the Mesolithic basis of the population on the Southern coast of the Crimea were Tauri tribes associated with the Kizil-Koba culture [7]. Locations of most Mesolithic sites in the Crimea and in the rest of Ukraine were determined by their proximity to water and suitability for hunting, fishing and gathering [3].

Location. Laspi VII site was discovered in 1973, and excavated in 1974-76 under the guidance of Dmitri Telegin (60 m² were dug out). The site is located in a rock canopy, with several large stones in front of it serving as a wind barrier [Буров]. Radiocarbon dating indicates the age of 5670-7135 BC [Телерін]. The sea level was lower then and the site was further from the sea by 0.5-1.5 m [2].

Skeletal remains in Laspi VII are located in five layers that were signified by the letters of the Cyrillic alphabet during the field work: А (top layer), Б, В, Г and Д (bottom layer). Here we use the Latin alphabet, the letters of which correspond to Cyrillic. Top layer – А ("А" in Cyrillic) beneath layers: В ("В"), С ("С"), Д ("Д"), Е ("Е"). Thin layers of clay, ash and the shellfish remains are deposited between bonyferous horizons. The type of sedimentation indicates that they are naturally transferred from the higher area (eastern part of the cliff).

Laspi VII is repeatedly mentioned in the papers (mainly by archaeologists). In addition to information about the instruments, we know about the discovery of a large number of mollusk shells (*Helix*, *Dreissena*) [2]. Most of the tools are different flint cores. But there are also bone harpoons (except for Laspi in the Crimea they were found only at Murzak-Koba and Kara-Koba). Spindly darts present at the Laspi site are also known from Shang-Koba and Fatma-Koba) [7]. Birds from this site are described by Tsvelykh and Taykova [8]. In our work we used other, previously non-published, material from the Laspi VII. Tsvelykh & Taykova did not mention all the birds in their paper, because those bones

were deposited in the back up funds of NMNH NASU during over 35 years and were found only in 2013.

Material: The total amount of skeletal remains is near 700, though it is possible to attribute only 201 of them to species or at least to a genus level. Recent fish and bird bones from the collection of department of vertebrate pa-

laeozoology in the National Museum of Natural History at the National Academy of Sciences of Ukraine (NMNH NASU) were used for comparison. The bones are deposited in NMNH NASU (No. AZ 117-318).

Results of determination of the osteological material are presented in the table 1.

Table 1

Layers	Bony fishes		Birds			Mammals		
	<i>Silurus glanis</i>	<i>Sander lucioperca</i>	<i>Otis tarda</i>	<i>Coturnix coturnix</i>	cf. <i>Porzana porzana</i>	<i>Erinaceus europaeus</i>	<i>Lepus europaeus</i>	<i>Cricetus cricetus</i>
A	v (2)	–	cor (5) hum (2) fem (1) tbt (1) tmt (2) ph (3)	–	–	–	–	–
A, B	v (19)	dn (1) v (3)	–	–	–	–	–	–
A, B, C	v (1)	dn (3) qua (1) art (1)	–	–	–	tb (1)	rad (2) cal (1)	–
B	–	–	tbt (1) ph (1)	–	–	–	–	–
C	v (8)	–	qua (1) cor (1) fem (1) tbt (1) ph (3)	–	–	–	–	–
B, C	–	–	–	–	–	–	rad (1) mt (1)	–
D	–	–	qua (1) sc (1) cor (1) ph (1)	–	–	–	–	–
D, E	–	–	–	–	–	–	hum (1) ul (1) cal (1) mt (1)	ul (1) tb (1)
E	v (1)	–	qua (5) cor (12) sc (16) ste (6) hum (5) ul (4) cmc (3) fem (1) tbt (15) tmt (11) ph (24)	tbt (1)	tbt (1)	–	ul (2) rad (2) tb (1) cal (1) mt (1) ph (1)	ul (1)

Abbreviations: dn – dentale; qua – quadratum; art – articulare; v – vertebra; cor – coracoideum; sc – scapula; ste – sternum; hum – humerus; ul – ulna; rad – radius; cmc – carpometacarpus; fem – femur; tbt – tibiotarsus; tb – tibia; tmt – tarsometatarsus; cal – calcaneus; mt – metatarsale; ph – phalanx.

Among the bone fragments, which could not be identified, 2 belong to the fish, 2 – to small mammals and more than 530 – to the birds. Regarding the bird bones, they do not have the epiphysis; it can be assumed that they probably belonged to the Great Bustard according to their sizes.

Discussion: Taxonomic diversity of vertebrates from the Laspi VII is peculiar. At first, it is low – only 8 species, 4 of which (*Coturnix coturnix*, cf. *Porzana porzana*, *Erinaceus europaeus*, *Cricetus cricetus*) can be considered an accidental prey, since they are represented by isolated findings, and these animals are lightweight (from 80 to 600 g). It can be assumed on the basis of the low taxonomic diversity and relatively small mass of prey that they are formed over a short period of time. The obtained results are slightly different from those for birds from Laspi VII, which were published by Tsvelykh & Taykova in 2011. They noted that the Great Bustard is the most abundant (common) species (the minimum possible number of individuals – 35), but also established the presence of 10 other bird species:

Gavia stellata (1 individual), *Gavia arctica* (2), *Podiceps grisegena* (1), *Phalacrocorax carbo* (2), *Anas platyrhynchos* (2), *Aythya marila* (1), *Bucephala clangula* (1), *Mergus merganser* (1), *Coturnix coturnix* (2), *Columba livia* (1) [8]. This difference in taxonomic diversity of birds exists due to the fact that our research and studies of Tsvelykh & Taykova were based on bone material from the different wells with "cooking remains". So they could be formed at different times and perhaps even by different generations. Besides the difference in taxonomic diversity, there are other facts for such an assumption. At first, the ratio balance of bustard bones in different layers. In the paper of Tsvelykh & Taykova, 32.3% bones of this species were in the layer A and quite more – in the layer E. In our collection the most was in the layer E (74.2% from the total number of determined bones, and more than 90% based on bone fragments without epiphyses). Consequently, people who left the remains processed by Tsvelykh & Taykova belong to ate bustard meat during their stay in the Laspi VII more

or less regularly, adding other bird species to the ration. The remains processed by us belonged to people who had an opportunity to eat bustard just at the beginning of their stay. Probably a successful hunt for this species has been the main reason for the ancient people to stay in the Laspi. The amount of bustard they consumed was significantly smaller in subsequent time.

The nearly complete absence of bustard femurs is rather interesting. Only 3 small proximal femur fragments from the 136 that belonged to this species and from the 530 that supposedly belonged to the Great Bustard were found (2.2% or 0.45%, respectively) [8]. We assume that ancient people did not throw this bone away with others and it could be used for certain purposes. At the same time, femur contains more than 4% of bustard bones in materials of Tsvelykh & Taykova. It also strengthens us in the opinion that these sets of remains were left after different generations of people.

Bustard inhabits open plain areas and is absent in the mountains. These birds appear on the southern coast of Crimea only in some winters, when some of the specimens are unable to migrate through the Kerch peninsula due to harsh weather conditions [1]. The area near Mesolithic Laspi is also mountainous; therefore bustard was hunted in the winter.

The majority of identifiable fish bones belongs to the European catfish (*Silurus glanis*), slightly less – to Zander (*Sander lucioperca*). Body length of catfish from the layer A, recovered using the method of V.D. Lebedev [4] is about 70 cm, pike-perch – near 56 cm. Thus, ancient people preferred to catch relatively small-sized fish. Part of the zander bones (dentale, vertebrae) from the layers A and B likely belongs to young specimens. Catfish remains are rather interesting in many aspects. Firstly, this species does not exist in the Crimea anymore, having become extinct recently [5]. Secondly, there are practically no rivers in the region of Laspi. The nearest large water body – Chornaya River – is more than 9 km away (given the mountainous terrain, it is actually more than 15 km from the site). Sukhaya River, which is located near the Laspi, is a temporal watercourse [9]. It is known that before the earthquake in 1790 there were many rivers in that area, as shown in its name (from the Greek "λάσπη" – "dirt", because this territory was nurtured by numerous watercourses). But the natural disaster destroyed existing water network [6]. Those now non-existent rivers were probably deep enough

for catfish. A significant amount of catfish remains also suggests the existence of creeks and whirlpools. Aquatic vegetation in this part of the river was absent or poorly developed, because it is known that Zander avoids overgrown areas [11]. With the ancient methods of fishing it was more convenient to catch the catfish in the winter, so it confirms our assumption that the bones from Laspi VII belong to animals caught during the winter.

Conclusions: The prevalent species in Laspi location are the Great Bustard (*Otis tarda*), Wels catfish (*Silurus glanis*), Zander (*Sander lucioperca*) and European hare (*Lepus europeus*). Grey Partridge (*Perdix perdix*), Spotted Crane (cf. *Porzana porzana*), European hedgehog (*Erinaceus europaeus*) and European hamster (*Cricetus cricetus*) are presented by single bones and are probably an accidental prey.

Animals that were found in the Laspi VII site have probably been hunted during the winter. It can explain the specific species composition of the locality, which slightly differs from those of the other Mesolithic sites in the Crimea. Rivers in Laspi, destroyed by an earthquake in 1790, were deep enough for catfish to live there (this species is now extinct in the faunal composition of the Crimea).

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Л. Горобець, канд. біол. наук,
КНУ імені Тараса Шевченка, Київ,
О. Ковальчук, асп.

Національний науково-природничий музей Національної академії наук, Київ,
Л. Рековець, д-р біол. наук, проф.
Вроцлавський Університет екології та науки про життя, Вроцлав, Польща

ХРЕБЕТНІ З МЕЗОЛІТИЧНОЇ СТОЯНКИ ЛАСПИ VII (АР Крим, Україна)

У статті представлено результати дослідження решток хребетних із мезолітичної стоянки Ласпи VII. Встановлено, що даному місцезнаходженню притаманне відносно невелике видове різноманіття, представлене чотирма основними видами: дроговою, сомом (вид, на сьогодні відсутній у Криму), судаком та зайцем і чотирма видами, які потрапили до складу здобичі випадково: перепілкою, погоничем звичайним, хом'яком та їжаком. Основу раціону становила дрогова, успішне полювання на яку, ймовірно, було причиною зупинки мезолітичних людей у Ласпі. Аналіз видового складу дає підстави припускати, що здобич було впольовано взимку. Встановлено, що річки регіону, знищені землетрусом 1790 р., були достатньо глибокі, оскільки в них мешкав сом.

Ключові слова: мезоліт, Крим, хребетні.

Л. Горобець, канд. биол. наук
КНУ имени Тараса Шевченко, Киев,
А. Ковальчук, асп.

Национальный научно-природоведческий музей Национальной академии наук Украины, Киев,
Л. Рековець, д-р биол. наук, проф.
Вроцлавский Университет экологии и науки о жизни, Вроцлав, Польша

ПОЗВОНОЧНЫЕ ИЗ МЕЗОЛИТИЧЕСКОЙ СТОЯНКИ ЛАСПИ VII (АР Крым, Украина)

В статье представлены результаты исследования остатков позвоночных из мезолитической стоянки Ласпи. Установлено, что этому местонахождению присуще относительно небольшое видовое разнообразие, представленное четырьмя основными видами: дроговой, сомом (вид, на сегодня отсутствующий в Крыму), судаком и зайцем, а также четырьмя видами, которые попали в добычу случайно: перепёлкой, обыкновенным погоничем, хомяком и ежом. Основу рациона составляла дрогова, успешная охота на которую, вероятно, была причиной остановки мезолитических людей в Ласпи. Анализ видового разнообразия даёт основания полагать, что животных добыли зимой. Установлено, что реки региона, уничтоженные землетрясением 1790 г., были достаточно глубоки, поскольку в них обитал сом.

Ключевые слова: мезолит, Крым, позвоночные.