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## PROSPECTS FOR EXPANDING THE RANGE OF MEDICINAL PRODUCTS BASED ON VELVET ANTLERS

Reindeer antlers (maral, bison, spotted deer) have long been used in folk and official medicine in the world. Despite a significant number of studies of antlers as sources of biologically active substances (BAS), the study of their synergistic properties and diverse current aspects of application, the range of the raw material and products in the pharmaceutical market of Ukraine requires a more detailed study.

**Aim.** To determine the feasibility of creating new medicines from antler BAS by analyzing the range of the medicinal raw material, medicines, dietary supplements and other pharmacy products based on antlers in the pharmaceutical market of Ukraine.

**Materials and methods.** The analysis of the range of medicines and dietary supplements was carried out based on data from the State Register of Medicines of Ukraine, the electronic resource Compendium.online, according to the ATC classification system as of January – February, 2025. Information on retail prices was obtained from the online service [www.tabletki.ua](http://www.tabletki.ua) and available online marketplaces. The methods of information and bibliographic search, systematization, analysis and generalization, comparative, marketing, content analysis and graphic were used in the work.

**Results.** Based on the results of the study, it was determined that only one product name with the antler raw material was registered as a medicinal product – “Pantocrin”, liquid extract, 50 ml, manufactured by Ternopharm (Ukraine). Among the entire product range, the share of dietary supplements is almost 93 %. The main suppliers of these products are foreign manufacturers from China and the USA, which total share is 63.6 %, domestic manufacturers account for 25 % of the range. It has been found that the domestic pharmaceutical market contains the raw material of antlers (slices, powder), dry and liquid extracts, liquid dosage forms (tinctures, drops, elixirs), tablets, pills, capsules, creams, cream-balms, gels, sprays and teas.

**Conclusions.** The results obtained have shown the prospects of developing new domestic complex and combined medicines, which include BAS of antlers. However, it is necessary to take into account possible contraindications to their use.

**Keywords:** antlers; raw material; medicines; dietary supplements; assortment; pharmaceutical market.

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### ПЕРСПЕКТИВИ РОЗШИРЕННЯ АСОРТИМЕНТУ ЛІКАРСЬКИХ ЗАСОБІВ НА ОСНОВІ ПАНТІВ

Панти північних оленів (марала, ізюбра, плямистого оленя) здавна застосовують у народній і офіційній медицині у світі. Незважаючи на значну кількість досліджень пантів, як джерела біологічно активних речовин (БАР), вивчення їх синергічних властивостей та різнопланові актуальні аспекти застосування, асортимент сировини та засобів на фармацевтичному ринку України потребує більш детального вивчення.

**Мета** – з'ясування доцільності створення нових лікарських засобів з БАР пантів шляхом аналізу асортименту лікарської сировини, лікарських засобів, дієтичних добавок та інших товарів аптечного асортименту на основі пантів на фармацевтичному ринку України.

**Матеріали та методи:** аналіз асортименту лікарських засобів та дієтичних добавок здійснювали на основі даних Державного реєстру лікарських засобів України, електронного ресурсу Compendium.online, відповідно до класифікаційної системи АТХ, станом на січень–лютий 2025 р. Інформацію про роздрібні ціни отримували на онлайн-сервісі [www.tabletki.ua](http://www.tabletki.ua) та доступних онлайн-маркетплейсах. У роботі використовували методи інформаційного та бібліографічного пошуку, систематизації, аналізу та узагальнення, порівняльний, маркетинговий, контент-аналіз та графічний.

**Результати дослідження.** За результатами дослідження визначено, що як лікарський засіб зареєстровано лише одне найменування товару із сировиною пантів – Пантокрин, екстракт рідкий 50 мл виробництва «Тернофарм» (Україна). З усього асортименту товарів частка дієтичних добавок становить майже 93 %. Основними постачальниками цих товарів є закордонні виробники з Китаю та США, сумарна частка яких складає 63,6 %, на частку вітчизняних виробників припадає 25 % асортименту. Установлено, що на вітчизняному фармацевтичному ринку присутня сировина пантів

(слайси, порошок), сухі та рідкі екстракти, рідкі лікарські форми (настойки, краплі, еліксири), таблетки, пілюлі, капсули, креми, креми-бальзами, гелі, спреї та чай.

**Висновки.** Отримані результати показали перспективність розробки нових вітчизняних комплексних та комбінованих лікарських засобів, до складу яких входять БАР пантів. Водночас необхідно брати до уваги можливі протипоказання до їх застосування.

**Ключові слова:** панти; сировина; лікарські засоби; дієтичні добавки; асортимент; фармацевтичний ринок.

**Statement of the problem.** In the current conditions of martial law in the country, pharmacists have an urgent need to find sources of high-quality medicinal raw material (MRM) to create new effective medicines. The use of already known sources of biologically active substances (BAS) in additional areas of use facilitates this task. Attention is drawn to the types of MRM that have already been sufficiently studied in chemical and pharmacological terms, but the number of medicines based on them is insufficient or they do not exist at all. One of these types of MRM is velvet antlers.

Antlers are skeletal projections of the skull bones, composed primarily of the protein collagen and the mineral calcium hydroxyapatite [1]. Antlers are found in most species of the deer family (*Cervidae*), grow and shed annually, usually only by males, and are the only mammalian organs that can fully regenerate after loss [2-4]. The biological processes underlying the regeneration of animal limbs, organs, and tissues may have important applications in medicine [5-7].

Velvet antlers are the antlers of deer during their annual growth period, having a tubular, non-keratinized structure, filled with blood, and covered with thin velvety skin with short, soft hair.

To obtain antlers (velvet antlers), Siberian deer subspecies are bred in captivity: maral (*Cervus elaphus sibiricus*), bison (*Cervus canadensis xanthopygus*), and spotted deer (*Cervus nippon*) of the *Cervidae* family [8]. Velvet antlers contain macro- and microelements, sugars, fatty acids, amino acids, and nucleotides as basic molecules that are converted into macromolecules, such as polysaccharides, lipids, proteins, and nucleic acids, respectively, which determines their biological activity [9].

Velvet antler reindeer husbandry is widely developed in Kazakhstan, China, and New Zealand (more than 2 million heads). Until the 1970s, the international market for antler products was divided between the USSR, China, and South Korea. However, the demand for velvet antlers and dietary meat of producer animals

led to high profitability, i.e., proved the profitability of antler farming. After 1980, new participants, such as New Zealand, Australia, and Canada, began to actively appear in the velvet antler reindeer husbandry and maral husbandry market. In modern times, the value of maral and deer antlers is increasingly recognized, and competition in the international market is only growing [10].

In Ukraine, the introduction of the spotted deer species started at the beginning of the 19th century. During the period from 1909 to 2005, more than a thousand individuals of spotted deer were released into the reserves and hunting grounds of Ukraine. From the natural range within the Ussuriysk region, animals were directly imported to Kherson (Askaniya-Nova), Kyiv (Zalissyia Residence) and Cherkasy regions, and then the animals were distributed to the rest of Ukraine. According to expert estimates, today the population of spotted deer in Ukraine is over three thousand individuals [11, 12]. It is considered that breeding of spotted deer in enclosures, with its subsequent release into hunting grounds, is also promising, but in order for spotted deer breeding to be profitable for the hunting industry, it is necessary to completely eliminate the death of animals from unauthorized hunting and predators [13, 14].

Thus, the only sika deer farm in Ukraine today, with three hundred animals, is located on 57 hectares between the villages of Iza and Lypcha (Khustska united territorial community, Zakarpattia Oblast). They are bred for their valuable horns (antlers), which are the raw material for creating medicines.

The velvet antlers of the animals are cut off annually, starting from the age of four, for twelve to thirteen years. The following year, after the cutting, the horns are renewed. It is possible to harvest 70 kg of velvet antlers annually [15].

**Analysis of recent research and publications.** Nowadays, the morphological and anatomical structure of deer antlers and various types of the biological activity of extracts from

them continue to be studied. Thus, the proven anticancer effect of antler extracts on glioblastoma cell lines makes it possible to implement a new strategy in the treatment of this tumor [16]. At the same time, there are other areas of research. Thus, Chinese researchers studied how the functional regeneration of antlers occurs, determined the speed of the process and identified a population of precursor cells that were responsible for the regenerative cycle of velvet antlers, and, most likely, belonged to a common type of stem cells of mammalian regeneration. These studies are conducted from the point of view of creating a biomodel for the regeneration of mammalian bones and other organs [5] and as a tool for environmental monitoring [6].

We have analyzed available domestic and foreign sources of information regarding the raw material base, chemical composition, pharmacological action, dosage forms from antlers and their use in medicine.

The chemical composition of sika deer antlers determines their use for the treatment of diseases of the musculoskeletal system. They are effective in the treatment of osteochondrosis, osteoarthritis, arthritis, joint pain of various origins, pain and spasms in muscles, neuralgia, problems with the vertebrae. There is evidence of the anticancer activity [16].

Maral velvet antlers, in turn, in any form (baths, teas or products based on them), cope with trophic disorders and diseases of the cardiovascular system – varicose veins, venous insufficiency, dystonia, angina pectoris or ischemic heart disease. They are also used to treat diseases of the nervous system, such as vegetative-vascular dystonia, neuroses, panic attacks, chronic fatigue syndrome, asthenic conditions, in particular in pediatrics. Maral antlers can be used to treat peptic ulcer disease, pancreatic diseases, gastritis, skin and blood diseases, sexual dysfunction and increase potency, treat infectious diseases, accelerate metabolism and improve the functioning of the digestive system, during menopause, for rapid recovery from injuries [17]. The aspects of using this type of MRM in martial law conditions are of particular importance since they are effective in acute and chronic stress, nervous exhaustion, improve the overall tone of the body, and increase performance and adaptability.

**Identification of aspects of the problem unsolved previously.** Despite the significant amount of research on velvet antlers as sources of BAS, the study of their synergistic properties and diverse current aspects of application, the range of the raw material and products in the pharmaceutical market of Ukraine requires more detailed study.

**Objective statement of the article.** The aim of the article is to clarify the feasibility of creating new medicines from velvet antler BAS by analyzing the range of MRM and medicines from antlers in the market of Ukraine.

**Materials and methods.** The analysis of the range of medicines and dietary supplements was carried out based on data from the State Register of Medicines of Ukraine, as well as the electronic resource Compendium.online, in accordance with the ATC classification system, as of January – February, 2025. Information on retail prices was obtained from the online service [www.tabletki.ua](http://www.tabletki.ua), the electronic resource Compendium.online and available online marketplaces. Such research methods as information and bibliographic search, content analysis, systematization, analysis and generalization, comparative, marketing and graphic method were used in the work.

**Presentation of the main material of the research.** According to the results of the analysis of information in the period January–February, 2025, it has been found that the domestic market offers the own MRM, medicines and dietary supplements.

The results of the analysis of offers of antler-based medicinal products available in the Ukrainian market are summarized in Table 1.

According to the results of the analysis of the modern retail pharmaceutical market, it has been determined that the vast majority of offers of velvet antler-based products are not medicines. Among the assortment analyzed, only one name – “Pantocrin”, a liquid extract, 50 ml, manufactured by “Ternofarm” (Ukraine) – is included in the State Register of Medicines of Ukraine.

The structural analysis of the range has shown that velvet antler-based products are offered in a variety of forms: MRM (slices), teas, dry extracts, liquid (tinctures, drops, elixirs) dosage forms, tablets, pills, capsules, creams, cream-balsms, gels and sprays. The general distribution of the shares of different forms of products in the assortment is shown in Fig. 1, a.

Table 1

## THE ANALYSIS OF THE RANGE OF ANTLER-BASED PRODUCTS IN THE UKRAINIAN MARKET

No.	Trade name of medicines and dietary supplements	Composition	Dosage form	Manufacturer, country	Average retail price, UAH	Source of information
1	2	3	4	5	6	7
1	The drug "Pantocrin"	extract from maral, bison or spotted deer antlers (1:6.58, 52% ethanol)	liquid extract	"Ternopharm", Ukraine	50 ml – 320-357	<a href="https://tabletki.ua/%D0%9F%D0%B0%D0%BD%D1%82%D0%BE%D0%BA%D1%80%D0%B8%D0%BD/3375/">https://tabletki.ua/%D0%9F%D0%B0%D0%BD%D1%82%D0%BE%D0%BA%D1%80%D0%B8%D0%BD/3375/</a>
2	Velvet antlers	slices of antlers	slices	"Changbaisha", China	10 g – 150, 50 g – 675 500 g – 2690 1000 g – 3790	<a href="https://prom.ua/p514167921-panty-luchsheesredstvo.html">https://prom.ua/p514167921-panty-luchsheesredstvo.html</a>
3	Deer antlers	dry extract of maral antlers 1:20	dry extract	"Changbaisha", China	500 g – 2000 1000 g – 5380	<a href="https://prom.ua/ua/search?search_term=%D0%BF%D0%B0%D0%BD%D1%82%D0%B8%20%D0%B5%D0%BA%D1%81%D1%82%D1%80%D0%B0%D0%BA%D1%82">https://prom.ua/ua/search?search_term=%D0%BF%D0%B0%D0%BD%D1%82%D0%B8%20%D0%B5%D0%BA%D1%81%D1%82%D1%80%D0%B0%D0%BA%D1%82</a>
4	"Syla marala" (power of the deer)	dry extract of maral antlers	powder	China	100-175	<a href="https://prom.ua/p1621790153-sila-marala-poroshok.html">https://prom.ua/p1621790153-sila-marala-poroshok.html</a>
5	"Pantocrin"	liquid extract of maral antlers (1:10, 40% ethanol)	liquid extract	PE "Agriculture of Ukraine", Ukraine	250 ml – 170-215	<a href="https://prom.ua/p1676411651-pantokrin-nastojka-250ml.html">https://prom.ua/p1676411651-pantokrin-nastojka-250ml.html</a>
6	"Pantocrin"	water-alcoholic extract from maral, bison or spotted deer antlers (extractant – ethyl alcohol 52%)	liquid extract	"Biolik", Ukraine	50 ml – 218-367	<a href="https://tabletki.ua/%D0%9F%D0%B0%D0%BD%D1%82%D0%BE%D0%BA%D1%80%D0%B8%D0%BD/1066940/#%D0%A1%D0%BE%D1%81%D1%82%D0%B0%D0%B2">https://tabletki.ua/%D0%9F%D0%B0%D0%BD%D1%82%D0%BE%D0%BA%D1%80%D0%B8%D0%BD/1066940/#%D0%A1%D0%BE%D1%81%D1%82%D0%B0%D0%B2</a>
7	"Panto Provite"	elixir with deer antlers	elixir	"Ancient East", China	6x10 ml – 2299-2468	<a href="https://zdorovij-organizm.com.ua/ua/p1275767652-eliksir-panto-provite.html">https://zdorovij-organizm.com.ua/ua/p1275767652-eliksir-panto-provite.html</a>
8	Deer antlers	spotted deer antlers, barberry berries, sea buckthorn berries	tincture	"Magnolia Pharm", Ukraine	250 ml – 300-675	<a href="https://prom.ua/p1719273454-nastojka-panty-marala.html">https://prom.ua/p1719273454-nastojka-panty-marala.html</a>
9	"Pantoral Extra+"	extract from maral, bison or spotted deer antlers (1:6.58) 52%.	tincture	Ukraine	125 ml – 990 250 ml – 1110	<a href="https://prom.ua/ua/p110117018-nastojka-pantoral-ekstra.html">https://prom.ua/ua/p110117018-nastojka-pantoral-ekstra.html</a>
10	Ginseng Elixir with antlers and deer heart blood (sugar-free)	ginseng, polygonatum, deer antlers, goji, orange essence, blood powder, citric acid, potassium sorbate, zinc gluconate, distilled water	elixir	China	10 x10 ml – 675	<a href="https://sinamed.com.ua/ua/p2453232176-eliksir-zhenshen-pantami.html">https://sinamed.com.ua/ua/p2453232176-eliksir-zhenshen-pantami.html</a>
11	"Shenrong Elixir" with ginseng and young deer velvet antler extract (pantocrine)	deer antlers, ginseng, mountain ash, epimedium root, loquat fruit, astragalus root, goji berries	elixir	"Ancient East", China	10 pcs. – 3520	<a href="https://prom.ua/ua/p1319597165-eliksir-shenrong-pantov.html?srsltid=AfmBOoolLalZK1cG9fNSxnER3y_mIHtk-meBZDglg8mU_edEnebZWBvP">https://prom.ua/ua/p1319597165-eliksir-shenrong-pantov.html?srsltid=AfmBOoolLalZK1cG9fNSxnER3y_mIHtk-meBZDglg8mU_edEnebZWBvP</a>

Continuation of the Table 1

1	2	3	4	5	6	7
12	Deer velvet antler elixir	extract from wild reindeer antlers	elixir	"Ancient East", China	10 x10 ml – 2399	<a href="https://zdorovij-organizm.com.ua/ua/p712764267-eliksir-pant-olenya.html?srsltid=AfmBOoq3D-UhfYXpqbopQOBU3D1ofLpIqHfeSeXyoAqsPL34LrHnlh">https://zdorovij-organizm.com.ua/ua/p712764267-eliksir-pant-olenya.html?srsltid=AfmBOoq3D-UhfYXpqbopQOBU3D1ofLpIqHfeSeXyoAqsPL34LrHnlh</a>
13	Deer Antler, Dragon Herbs	deer antler extract (30% ethanol)	drops	USA	30 ml – 2800-3000	<a href="https://biotus.ua/ua/olen-i-roga-jekstrakt-deer-antler-dragon-herbs-60-ml.html">https://biotus.ua/ua/olen-i-roga-jekstrakt-deer-antler-dragon-herbs-60-ml.html</a>
14	"Pantosil"	extracts from antlers, horsetail herb and citrus fruits	tablets	"Danika-Pharm", Ukraine	90 ml – 200	<a href="https://fitoapoteka.com.ua/shop/bad-pan-to-sil/?srsltid=AfmBOoqHkerQDohCqe4G_XWb2NIEkQxTEU-5L4HZOp_5CInpoT1DOF5Y">https://fitoapoteka.com.ua/shop/bad-pan-to-sil/?srsltid=AfmBOoqHkerQDohCqe4G_XWb2NIEkQxTEU-5L4HZOp_5CInpoT1DOF5Y</a>
15	Lu Xue Lu Bian Lu Syuye Lu Byan'	DD with deer antler extract and cordyceps	tablets	"Ancient East", China	120 ml – 1689	<a href="https://zdorovij-organizm.com.ua/ua/p1653954086-preparat-pant-olenya.html?srsltid=AfmBOorrGBRD14O6Ho4LAMxGcFIBMnFTKeYm4FBb2gGpSZ3RVtxEeAQa">https://zdorovij-organizm.com.ua/ua/p1653954086-preparat-pant-olenya.html?srsltid=AfmBOorrGBRD14O6Ho4LAMxGcFIBMnFTKeYm4FBb2gGpSZ3RVtxEeAQa</a>
16	Dietary supplements from deer antler extract, cordyceps and trepang	extract of deer velvet antlers, cordyceps and trepang	tablets	"Ancient East", China	100 pcs. – 1689	<a href="https://prom.ua/ua/p1630306193-preparat-pant-olenya.html">https://prom.ua/ua/p1630306193-preparat-pant-olenya.html</a>
17	Dietary supplements from deer antler extract with enhanced formula	reindeer antler extract	tablets	"Ancient East", China	60 pcs. – 1168	<a href="https://www.vekvostok.com.ua/index.php?route=product/product&amp;product_id=4614">https://www.vekvostok.com.ua/index.php?route=product/product&amp;product_id=4614</a>
18	Capsules to increase potency and libido	reindeer antler extract	capsules	"Ancient East", China	130 pcs. – 1689	<a href="https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5567">https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5567</a>
19	Capsules for a stable erection	deer velvet antler extract	capsules	"Ancient East", China	100 pcs. – 1368	<a href="https://vekvostok.com.ua/index.php?route=product/search&amp;search=%D0%BF%D0%B0%D0%BD%D1%82">https://vekvostok.com.ua/index.php?route=product/search&amp;search=%D0%BF%D0%B0%D0%BD%D1%82</a>
20	Capsules for erection and increasing potency	deer penis powder, deer antler powder, ginseng, lemongrass fruit, oysters, yams, silkworms, cordyceps,	capsules	"Ancient East", China	130 pcs. – 1689	<a href="https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5845">https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5845</a>
21	Capsules with extracts of sea bass and deer antlers	triterpene glycosides of trepang extract, deer antler, palmetto palm, amino acids, pumpkin seeds, lycopen, royal jelly, saline cistanche ( <i>Cistanche deserticola</i> )	soft capsules	"Ancient East", China	100 pcs. – 1368	<a href="https://zdorovij-organizm.com.ua/ua/p1293957863-kapsuly-myagkie-trepang.html?srsltid=AfmBOorhgPXR69UpnxfeQziGJmtKRHAXLwIGle2HTOOK_UKFFmWjgqFX8">https://zdorovij-organizm.com.ua/ua/p1293957863-kapsuly-myagkie-trepang.html?srsltid=AfmBOorhgPXR69UpnxfeQziGJmtKRHAXLwIGle2HTOOK_UKFFmWjgqFX8</a>
22	Lubianpian Male Youth Pills (Lubianpian)	deer antler extract	tablets	"Ancient East", China	120 pcs. – 1689	<a href="https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5203">https://vekvostok.com.ua/index.php?route=product/product&amp;product_id=5203</a>

Continuation of the Table 1

1	2	3	4	5	6	7
23	Planetary Herbals, Full Spectrum, deer antler	deer antler powder, 500 mg	tablets	"Planetary Herbals", USA	60 pcs – 2106	<a href="https://bio.org.ua/ru/item/18839-planetary-herbals-full-spectrum-antler-velvet-250-mg-60-tablets">https://bio.org.ua/ru/item/18839-planetary-herbals-full-spectrum-antler-velvet-250-mg-60-tablets</a>
24	Planetary Herbals, Full Spectrum™ Antler Velvet	deer antler powder, 250 mg	tablets	"Planetary Herbals", USA	60 pcs – 2400-2500	<a href="https://fair.ua/ua/product/muzhckaya-formula-planetary-herbals-full-spectrum-panti-olenya-250-mg-60-tabletok.html?gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARIsAGvoOKdW8N1BUMQ2FNIMpcLUf1cs8F5ec2Vk6RNbGL3gZznfty9oqXDxSEaAJKbEALw_wcB">https://fair.ua/ua/product/muzhckaya-formula-planetary-herbals-full-spectrum-panti-olenya-250-mg-60-tabletok.html?gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARIsAGvoOKdW8N1BUMQ2FNIMpcLUf1cs8F5ec2Vk6RNbGL3gZznfty9oqXDxSEaAJKbEALw_wcB</a>
25	A remedy for male youth	reindeer velvet antlers, oyster extract, ginseng	capsules	"Attack", China	60 pcs – 256	<a href="https://prom.ua/ua/p2106158231-kapsuly-pant-olenya.html">https://prom.ua/ua/p2106158231-kapsuly-pant-olenya.html</a>
26	"Pantoral Extra+"	mature reindeer antler extract	tablets	Ukraine	100 pcs – 990	<a href="https://prom.ua/ua/p1649180585-pantoral-ekstra-plyus.html">https://prom.ua/ua/p1649180585-pantoral-ekstra-plyus.html</a>
27	Deer antlers, pills for potency and premature ejaculation	reindeer velvet antlers, saffron, tortoise shells, deer and Tibetan antelope testicles	pills	"Hongkong biotechnology", China	10 pcs – 380	<a href="https://prom.ua/ua/p816085752-panty-olenya-pilyuli.html">https://prom.ua/ua/p816085752-panty-olenya-pilyuli.html</a>
28	Pills for male potency	deer antlers, ginseng, deer penis, desert cistanche, cordyceps, geranium and others	pills	China	12+12 pcs. – 600	<a href="https://persik.in.ua/ua/p1975881594-preparat-dlya-muzhskoj.html?srltid=AfmBOorHLYGNHxCoT-ieRgk8k1EzND7x7xlffgsE1ytMakZ-9n0ty_Gs">https://persik.in.ua/ua/p1975881594-preparat-dlya-muzhskoj.html?srltid=AfmBOorHLYGNHxCoT-ieRgk8k1EzND7x7xlffgsE1ytMakZ-9n0ty_Gs</a>
29	"Cigapant forte"	reindeer antler powder, 500 mg	capsules	"Elite Pharm", Ukraine	50 pcs. – 262	<a href="https://tabletki.ua/%D0%A6%D0%B8%D0%B3%D0%B0%D0%BF%D0%B0%D0%BD%D1%82-%D0%A4%D0%BE%D1%80%D1%82%D0%BS/1030068/">https://tabletki.ua/%D0%A6%D0%B8%D0%B3%D0%B0%D0%BF%D0%B0%D0%BD%D1%82-%D0%A4%D0%BE%D1%80%D1%82%D0%BS/1030068/</a>
30	"Golden Deer" (Shen Rong San Shen Bao)	deer antlers, ginseng root, Huangjing herb, cordyceps, Tibetan saffron, snow lotus, Tibetan yak testicle extract	capsule balls	China	100 pcs – 500-600	<a href="https://prom.ua/p1215132756-shariki-dlya-potentsii.html">https://prom.ua/p1215132756-shariki-dlya-potentsii.html</a>
31	"Pantogor" for joint and bone pain	Canadian deer velvet antler extract, maclura fruit extract, devil's claw extract, Adam's root, basketplant ( <i>Callisia fragrans</i> ) extract	cream	Australia	50 ml – 229	<a href="https://prom.ua/ua/p1245680482-pantogor-krem-stredstvo.html">https://prom.ua/ua/p1245680482-pantogor-krem-stredstvo.html</a>

Continuation of the Table 1

1	2	3	4	5	6	7
32	"Pantogor D3"	Canadian deer velvet antler extract, maclura fruit extract, devil's claw extract, Adam's root, basketplant ( <i>Callisia fragrans</i> ) extract	gel	"Pharma", Canada	50 ml – 290-460	<a href="https://euopharm.online/product/DrNgk3xXZ3nLpW-pantogor-d3?utm_source=google_pmuua&amp;utm_campaign=ukraine&amp;utm_medium=cpc&amp;network=x&amp;placement=&amp;adid=&amp;match=&amp;utm_term=&amp;site_id=&amp;advert_id=&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KfhnV7ShXF1yiAkbpX--49GvDR9QVWizpcHGuvwdjymwtKkXGKUaAvIoEALw_wcB">https://euopharm.online/product/DrNgk3xXZ3nLpW-pantogor-d3?utm_source=google_pmuua&amp;utm_campaign=ukraine&amp;utm_medium=cpc&amp;network=x&amp;placement=&amp;adid=&amp;match=&amp;utm_term=&amp;site_id=&amp;advert_id=&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KfhnV7ShXF1yiAkbpX--49GvDR9QVWizpcHGuvwdjymwtKkXGKUaAvIoEALw_wcB</a>
33	"Pantoflex" for joints	reindeer velvet antler extract, glucosamine, chondroitin, buckthorn, willow bark, fennel fruit, calendula flowers, bog strawberry roots	cream	India	50 g – 189-300	
34	"Artox" for joints	Maral velvet antler extract, bog strawberry root extract, pine needle extract	cream	"Newline", Ukraine	75 ml – 180	<a href="https://bigl.ua/ua/p1796820645-artoks-kompleks-dlya?utm_source=pmax&amp;utm_medium=cpc&amp;utm_content=ru&amp;utm_campaign=15_30_all&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KdkIQmKpJTAGicoBjt8V4u/P1nqOQYBqJPTuAnoLsajurkfjbfawAaAugxEALw_wcB">https://bigl.ua/ua/p1796820645-artoks-kompleks-dlya?utm_source=pmax&amp;utm_medium=cpc&amp;utm_content=ru&amp;utm_campaign=15_30_all&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KdkIQmKpJTAGicoBjt8V4u/P1nqOQYBqJPTuAnoLsajurkfjbfawAaAugxEALw_wcB</a>
35	Maral	maral velvet antler extract	gel	Australia	50 ml – 269	<a href="https://prom.ua/p1747395215-maral-gel-gel.html">https://prom.ua/p1747395215-maral-gel-gel.html</a>
36	"Artrodox"	maral velvet antler extract	cream	Ukraine	50 ml – 130	<a href="https://prom.ua/p1206464537-artrodeks-artrodeks-3478.html?utm_source=google_pmax&amp;utm_medium=cpc&amp;utm_content=pmax&amp;utm_campaign=Pmax_cpa_50_zootovary&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KczLw0ITsQYUJWEOVPz7Ljk_uz9yOMGgdcYiE1d2SnPF29YMeNCYaAKDJEALw_wcB">https://prom.ua/p1206464537-artrodeks-artrodeks-3478.html?utm_source=google_pmax&amp;utm_medium=cpc&amp;utm_content=pmax&amp;utm_campaign=Pmax_cpa_50_zootovary&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KczLw0ITsQYUJWEOVPz7Ljk_uz9yOMGgdcYiE1d2SnPF29YMeNCYaAKDJEALw_wcB</a>
37	"Arthropant"	deer antlers, glucosamine, chondroitin	cream-balm	"Healing spring", Ukraine	50 ml – 130-250	<a href="https://euopharm.online/product/je93nz2KZaJ3bA-artropant?utm_source=google_pmuua&amp;utm_campaign=ukraine&amp;utm_medium=cpc&amp;network=x&amp;placement=&amp;adid=&amp;match=&amp;utm_term=&amp;site_id=&amp;advert_id=&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KCDMDni38fsJjOzjp77VmA4EdRf9y9ctmGHaaI245MBhLwHx8D5DlaAsZoEALw_wcB">https://euopharm.online/product/je93nz2KZaJ3bA-artropant?utm_source=google_pmuua&amp;utm_campaign=ukraine&amp;utm_medium=cpc&amp;network=x&amp;placement=&amp;adid=&amp;match=&amp;utm_term=&amp;site_id=&amp;advert_id=&amp;gad_source=1&amp;gclid=Cj0KCQjwhMq-BhCFARisAGvo0KCDMDni38fsJjOzjp77VmA4EdRf9y9ctmGHaaI245MBhLwHx8D5DlaAsZoEALw_wcB</a>

Continuation of the Table 1

1	2	3	4	5	6	7
38	Bucked Up	Methylcobalamin, 100 mg; citrulline maleate, 6 mg; beta-alanine, 2 mg; taurine, 100 mg; Himalayan rock salt, 100 mg; antler extract, 50 mg; ginseng extract, 50 mg	powder	USA	315 g – 2748	<a href="https://dobavki.ua/ua/bucked-up-pre-workout-non-stimulant-strawberry-kiwi-11.1-oz-315-g/?srsltid=AfmBOoqN1AaEFogz6JCW0ymc30nhRKQtZib-UUQOonfRBXgh4-gfUVQI">https://dobavki.ua/ua/bucked-up-pre-workout-non-stimulant-strawberry-kiwi-11.1-oz-315-g/?srsltid=AfmBOoqN1AaEFogz6JCW0ymc30nhRKQtZib-UUQOonfRBXgh4-gfUVQI</a>
39	Bucked Up, post-workout spray	L-arginine chloride, deer antler extract, L-glutathione tripeptide, aloe vera extract (200:1 concentrate), niacin, barrenwort, devil's thorn	spray	"Earth's Bounty", USA	60 ml (2 fl oz) – 1865	<a href="https://prom.ua/ua/p2489698480-bucked-sprej-pantiv.html">https://prom.ua/ua/p2489698480-bucked-sprej-pantiv.html</a>
40	Bucked Up for women	deer velvet antler extract, rose root extract, ashwagandha root, L-isoleucine, L-leucine, L-valine, L-arginine chloride, barrenwort, biotin, collagen	spray	"Earth's Bounty", USA	60 ml – 1790	<a href="https://dobavki.ua/ua/bucked-up-deer-antler-velvet-extract-spray-women-2-fl-oz-60-ml/?gad_source=1&amp;gclid=Cj0KCQjwHMq-BhCFARIsAGvo0Kelu6er4NITTAALAO_M9tZreBrOmQpPz3rmtXvLutUnFRJC-OzP22QJlaAmU-EALw_wcB">https://dobavki.ua/ua/bucked-up-deer-antler-velvet-extract-spray-women-2-fl-oz-60-ml/?gad_source=1&amp;gclid=Cj0KCQjwHMq-BhCFARIsAGvo0Kelu6er4NITTAALAO_M9tZreBrOmQpPz3rmtXvLutUnFRJC-OzP22QJlaAmU-EALw_wcB</a>
41	"Longevity", anti-aging product	maral velvet antler extract	spray	"Earth's Bounty", USA	30 ml – 1600-1868	<a href="https://vitaminka.in.ua/p2193711024-earths-bounty-longevity.html?source=merchant_center&amp;gad_source=1&amp;gclid=Cj0KCQjwHMq-BhCFARIsAGvo0kdZCWwJRFJAjhXPOpxnuKRU07oegsIO6hYRsv432Rw8my4Kg_MZsH0aAp0xEALw_wcB">https://vitaminka.in.ua/p2193711024-earths-bounty-longevity.html?source=merchant_center&amp;gad_source=1&amp;gclid=Cj0KCQjwHMq-BhCFARIsAGvo0kdZCWwJRFJAjhXPOpxnuKRU07oegsIO6hYRsv432Rw8my4Kg_MZsH0aAp0xEALw_wcB</a>
42	Deer Antler Extract for Men	New Zealand deer velvet antler extract	spray	"Now Foods", USA	30 ml – 1038	<a href="https://dobavki.ua/ua/now-foods-igf-1-deer-antler-velvet-extract-lemon-flavor-1-fl-oz-30-ml/?q=%D0%BE%D0%BB%D0%B5%D0%BD%D1%8F%D1%87%D1%96%20%D1%80%D0%BE%D0%B3%D0%B8">https://dobavki.ua/ua/now-foods-igf-1-deer-antler-velvet-extract-lemon-flavor-1-fl-oz-30-ml/?q=%D0%BE%D0%BB%D0%B5%D0%BD%D1%8F%D1%87%D1%96%20%D1%80%D0%BE%D0%B3%D0%B8</a>
43	"Cheon Nok" extract	red panax ginseng, deer antlers	powder	Korea	30 g – 3194	<a href="https://dobavki.ua/ua/cheong-kwan-jang-cheon-nok-extract-korean-red-ginseng-deer-antler-1.06-oz-30-g/?q=%D0%BE%D0%BB%D0%B5%D0%BD%D1%8F%D1%87%D1%96%20%D1%80%D0%BE%D0%B3%D0%B8">https://dobavki.ua/ua/cheong-kwan-jang-cheon-nok-extract-korean-red-ginseng-deer-antler-1.06-oz-30-g/?q=%D0%BE%D0%BB%D0%B5%D0%BD%D1%8F%D1%87%D1%96%20%D1%80%D0%BE%D0%B3%D0%B8</a>
44	Green tea with maral velvet antlers (2 x 5 g)		tea	"Changbaisha", China	10 g (2 x 5 g) – 45	<a href="https://shafa.ua/home/yeda/napitki/chay">https://shafa.ua/home/yeda/napitki/chay</a>



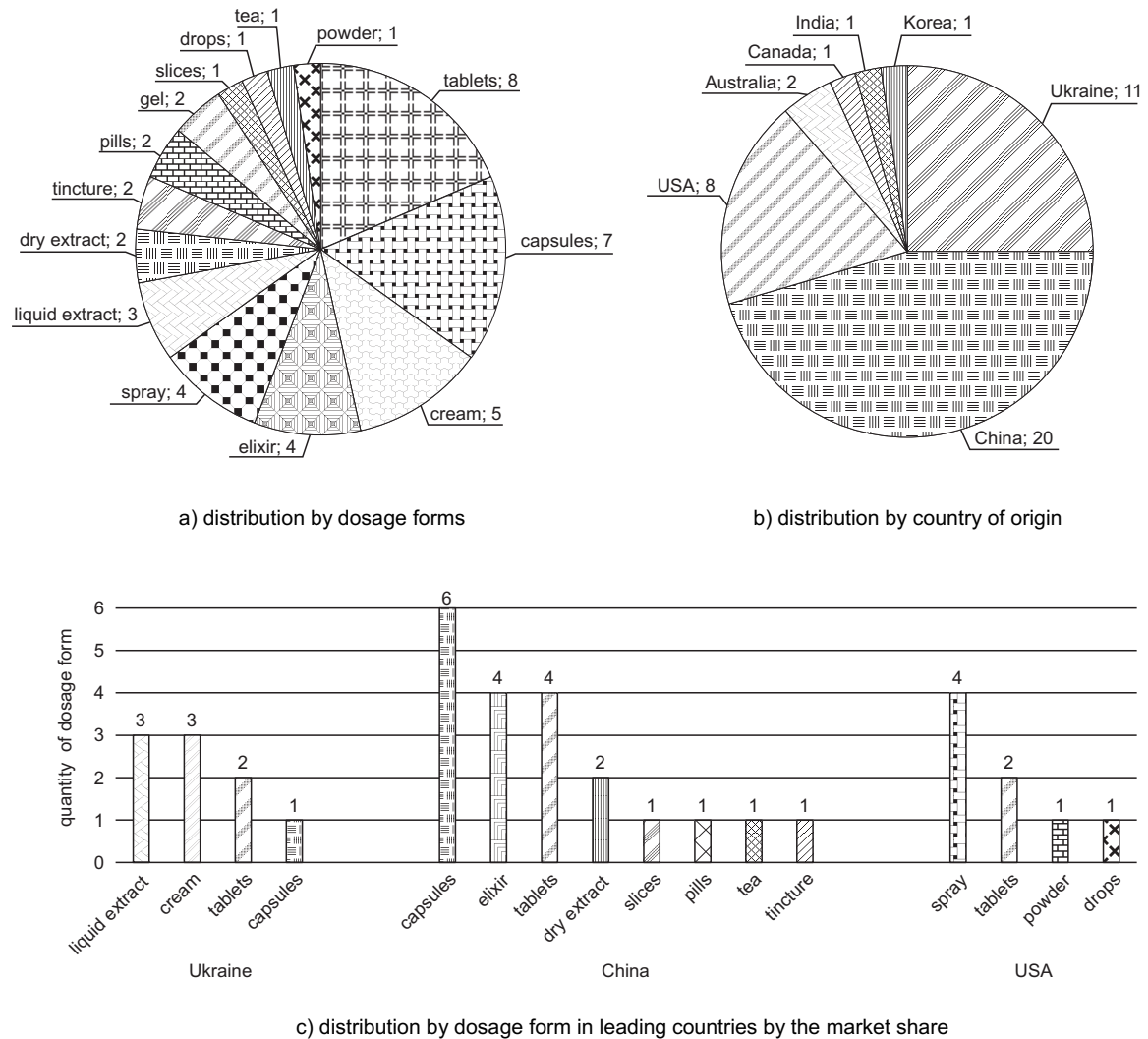


Fig. 1. The segmentation of the market of drugs and dietary supplements based on antlers in Ukraine

It has been also found that the majority of velvet antler-based products in Ukraine are dietary supplements, which are produced by foreign manufacturers (almost 74 % of the market). The undisputed leader in the number of velvet antler-based products is China with a share of 47 % of the total range of this group of products in the market (Fig. 1, b). It has been determined that in the range of Ukrainian-made products, among 4 forms, the largest number of products is represented by liquid extracts and creams (3 names each). Chinese-made products are presented in 8 forms, among which the most numerous are capsules (6 items). Velvet antler-based products produced in the USA are presented in the Ukrainian market in 4 forms with the largest number of sprays (Fig. 1, c).

To further determine the promising segment for the development of new velvet antler-based medicines by domestic manufacturers, we consider it appropriate to analyze the application features, indications and contraindications of the products available in the market.

According to the patient information leaflets of the drug and recommendations for the use of dietary supplements, the duration of use of velvet antler-based products for various diseases and conditions is mainly recommended for 10-20 days, with the possibility of repeated courses up to 4-6 times a year.

According to the results of the analysis, it has been determined that, among the velvet antler-based medicines produced by Ukrainian manufacturers, "Pantocrin" (liquid extract, alcoholic) present in the market belongs to the

Table 2

**THE RESULTS OF THE ANALYSIS OF THE COMPOSITION OF COMPLEX  
DIETARY SUPPLEMENTS BASED ON VELVET ANTLERS**

Additional components of dietary supplements based on antlers	Properties
oyster extracts (20)* as a source of zinc, iron and selenium, and sea cucumbers (16, 21) ( <i>Apostichopus japonicus</i> )	the source of trace elements and amino acids; aphrodisiacs and sources of polysaccharides and protein
<i>Cordyceps sinensis</i> fruiting body extract (15, 16, 20, 30)*	a stimulating effect on all human organ systems, acting as a biostimulant
ginseng root extracts ( <i>Panax gin-seng</i> ) (10, 20, 25, 28, 43)*	an adaptogen and biostimulant
extract from the raw material of monocot, or common black bryony ( <i>Dioscorea communis</i> , or <i>Tamus communis</i> ) (31, 32)*	the restoration of elasticity, structure and functions of the cartilage tissue
<i>Harpagophytum</i> root concentrate (devil's root) ( <i>Harpagophytum procumbens</i> ) (31, 32)*	analgesic effect
extract from the basketplant ( <i>Callisia frāgrans</i> ) herb (31, 32)*	actoprotective effect
osage orange fruit extract, Adam's apple ( <i>Maclura pomifera</i> ) (31, 32)*	blocking the spread of the inflammatory process, preventing further destruction of articular and periarticular tissues
bog strawberry extract ( <i>Comarum palustre</i> ) (34)*	pain relief, relief from edema and muscle spasms, restoring the bone tissue, cartilage and synovial fluid, restoring joint mobility
pine needle extract ( <i>Pinus silvestris</i> ) (34)*	strengthening the elasticity of ligaments and cartilage, minimizing the possibility of injury to joint elements, antiseptic effect, promoting rapid regeneration
citrus raw material extracts (14)*	the source of ascorbic acid, immune stimulation

\* – in brackets is the dietary supplement number from Table 1.

ATC group A13A Tonics. "Pantocrin" is an adaptogenic agent, stimulates the central nervous system and cardiovascular system, increases the skeletal muscle tone, and the intestinal motor activity. According to the patient information leaflet, the medicine has a number of serious contraindications, such as severe atherosclerosis, chronic heart failure, angina pectoris, hypercoagulation, nephritis (severe forms), diarrhea, hypertension, malignant neoplasms, and can also cause side effects (allergic reactions (skin itching), increased blood pressure, headache).

It should be noted that the variety of forms of velvet antler-based products in the market is achieved due to foreign manufacturers, which mainly present complex products. The plant raw material, macro- and microelements, vitamins are added to their composition, which expands the spectrum of the pharmacological activity. Foreign manufacturers supply velvet antler-based dietary supplements to improve the

condition of women's skin, hair, nails, anti-aging with deer antler extract and growth factors, immunomodulating agents, to increase physical activity before and after training, agents to increase potency, etc. But it is noteworthy that a significant number of foreign manufacturers do not indicate contraindications and side effects of these dietary supplements in the recommendations for use and position the products as a safe product of natural origin.

The results of the analysis of the composition and recommendations for the use of dietary supplements allows us to determine that complex dietary supplements include the following components that expand the spectrum of the pharmacological activity (Table 2).

While velvet antler-based medicines have existed for thousands of years, baths have long been available only in maral farms where antlers are harvested. Today, special concentrates are commercially available, which makes such

procedures more accessible at home. Velvet antler baths have a rejuvenating, detoxifying, and relaxing effect, especially when combined with green tea with maral velvet antlers.

**Conclusions and prospects for further research.** The analysis of the structure of the product range based on BAS of velvet antlers presented in the pharmaceutical market of Ukraine as of January – February 2025 has been conducted. The results obtained has shown the prospects of developing new domestic complex

and combined medicines, which include BAS of velvet antlers. However, it is necessary to take into account serious contraindications to their use. The results of the research conducted allow optimizing approaches to the creation of combined medicines with adaptogenic and tonic properties based on the raw material of animal origin by carefully selecting a high-quality composition.

**Conflict of interests:** authors have no conflict of interests to declare.

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