

## ANALYSIS OF DRUGS CONTAINING ENZYMES IN THE PHARMACEUTICAL MARKET OF THE REPUBLIC OF UZBEKISTAN

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### ABSTRACT

The given work presents relevant aspects of the marketing research of drugs containing enzymes on the pharmaceutical market of the Republic of Uzbekistan. The results that they got indicate the possibility of further marketing research of the nomenclature of drugs for assessment of the prosperity of production and introducing new domestic drugs containing enzymes.

**KEYWORDS:** Enzymes, content analysis, enzymes of plant origin, enzymes of animal origin, drugs.

### INTRODUCTION

Drugs that contain enzyme are widely used in modern medicine and pharmacy at present for the treatment and prevention of various diseases, especially for the treatment of diseases of the gastrointestinal tract, locally for the purification and healing of purulent wounds, often in the 1st phase of the wound process and many chronic diseases that require long-term treatment.<sup>[1,2]</sup>

The main sources of obtaining enzymes of plant origin are leaves and fruits of papaya (papain, cucumazim) and fruit juice of the pineapple (bromelain). Enzymes of animal origin (pepsin, trypsin, etc.) are obtained from organs in which intense biochemical processes happen (from the mucous membrane of the stomach, liver, kidneys, etc.).

The purpose of the present research is to conduct a content analysis of enzyme-containing drugs on the pharmaceutical market of the Republic of Uzbekistan.

### MATERIALS AND RESEARCH METHODS

The object of the present research is the nomenclature of drugs containing enzymes that included in the State Register of Medicines of the Republic of Uzbekistan.

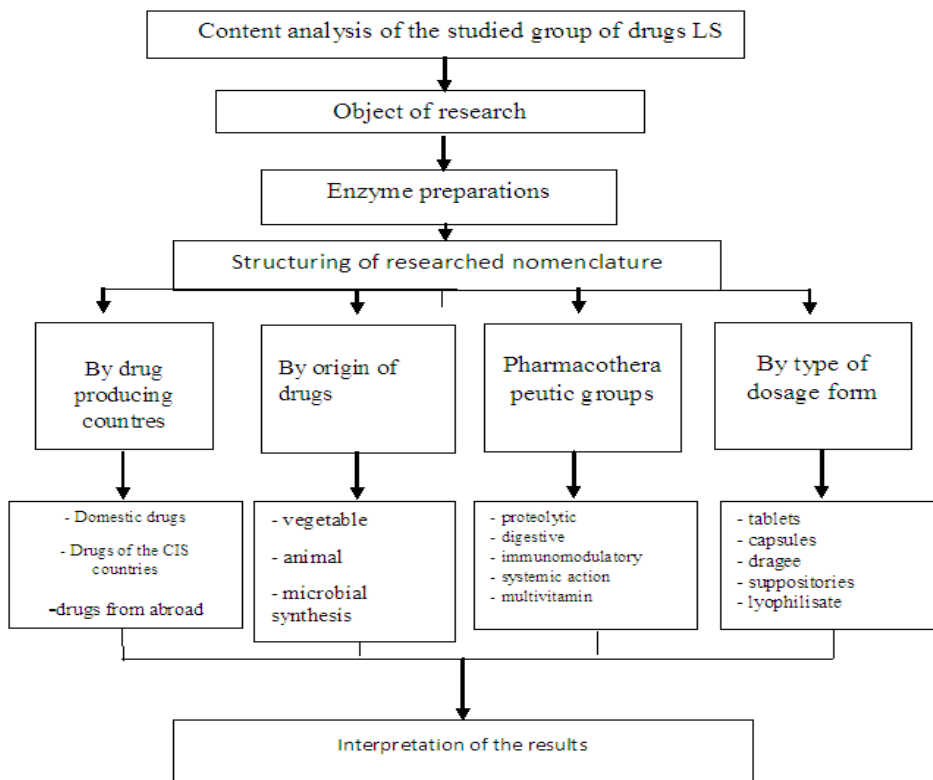
In the process of conducting a content analysis as an object of research, we studied data on the registration of drugs of enzyme origin based on the materials of the "State Register of Medicines and Medical Devices" for the period from 2017 to the first half of 2019. As well as the data from the Vidal Directory of Medicines in

Uzbekistan, the List of Essential Medicines, etc. are used.<sup>[3,4,5]</sup>

### RESEARCH RESULTS AND THEIR DISCUSSION

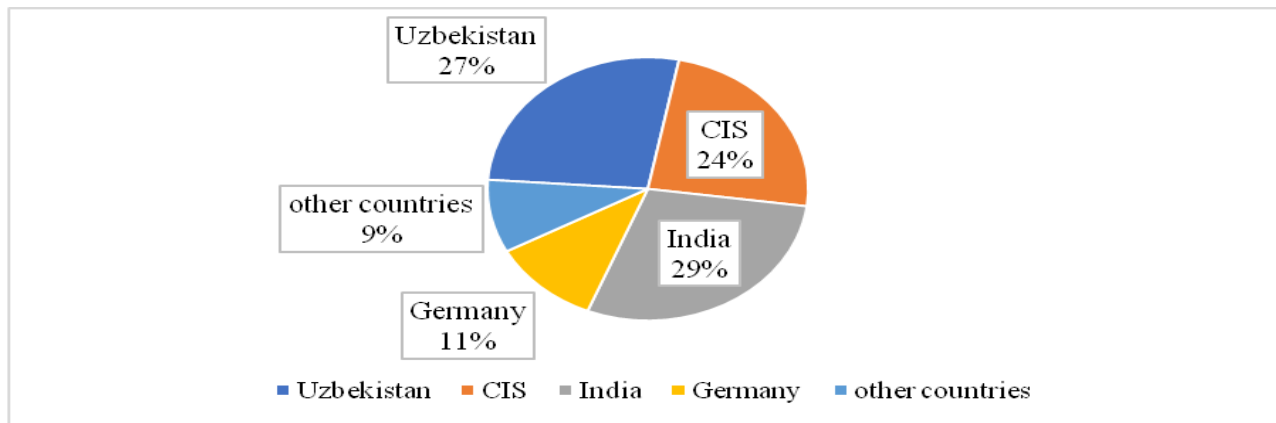
As it is known, content analysis (from the English language. Content analysis; content - substance) is a formalized method for research of textual graphic information, which consists in translating the studied information into quantitative indicators and its static processing. In our research work, we developed and used the following scheme for conducting content analysis.

**Table 1: The general scheme of conducting content analysis.**



At present 63 trade names of pharmaceutical preparations containing enzymes are registered in the Republic of Uzbekistan, taking into consideration various forms, dosages and packaging. The

pharmaceutical market of the Republic of Uzbekistan is mainly dominated by drugs containing import substituting enzymes (73%), the results are presented in Fig. 1.



**Figure 1: Distribution of trade names of drugs containing enzymes by manufacturing country in the first half of 2019.**

According to the State Register of Medicines, we conducted an analysis of the nomenclature of medicines

containing enzymes of origin. Currently, enzymes of animal origin prevail (80%), (tab. No. 2).

**Table 2: Analysis of the nomenclature of drugs containing enzymes by origin.**

№	By origin	2017		2018		2019	
		Qty	%	Qty	%	Qty	%
1	Vegetable	5	7,94%	7	10,94%	8	12,12%
2	Microbial synthesis	5	7,94%	6	9,37%	6	9,09%
3	Animal	53	84,12%	51	79,69%	52	78,78%

Also, all medicines containing enzymes can be divided into Pharmacotherapeutic groups: proteolytic agents (for external and internal use), digestive enzyme preparations, immunomodulation agents, enzyme preparations (systemic effects), multivitamin

preparations and other drugs. The largest amount of trade names of drugs containing enzymes is noted in the Pharmacotherapeutic group “enzyme preparations” (54.5%), Fig. 2.

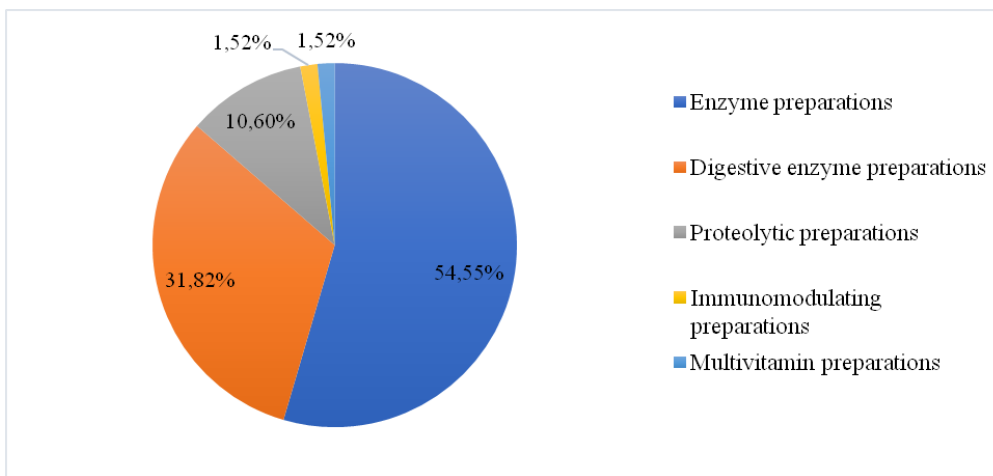


Figure 2: Distribution of trade names of medicines containing enzymes by Pharmacotherapeutic groups.

An analysis of the assortment of enzyme preparations by manufacturing country for the research period showed that of the total assortment of medicines of this group, the share of drugs import substituting from foreign countries falls, respectively: 47.62% in 2017, 48.44% in

2018 and 48.49% in 2019, from the CIS countries: 26.98% in 2017, 25.0% in 2018 and 24.24% in 2019, and particularly domestic production: 25.4% in 2017, 26.56% in 2018 and 27.27% in 2019, (tab. No. 3).

Table 3: Analysis of changes in the ratio of the position nomenclature of enzyme medicines by country of manufacture.

Years	General quantity	Foreign countries		Neighboring countries (CIS)		The Republic of Uzbekistan	
		Qty	%	Qty	%	Qty	%
2017	63	30	47,62%	17	26,98%	16	25,4%
2018	64	31	48,44%	16	25,0%	17	26,56%
2019	66	32	48,49%	16	24,24%	18	27,27%

A content analysis of enzyme drugs by type of dosage form was carried out too (Fig. 3).

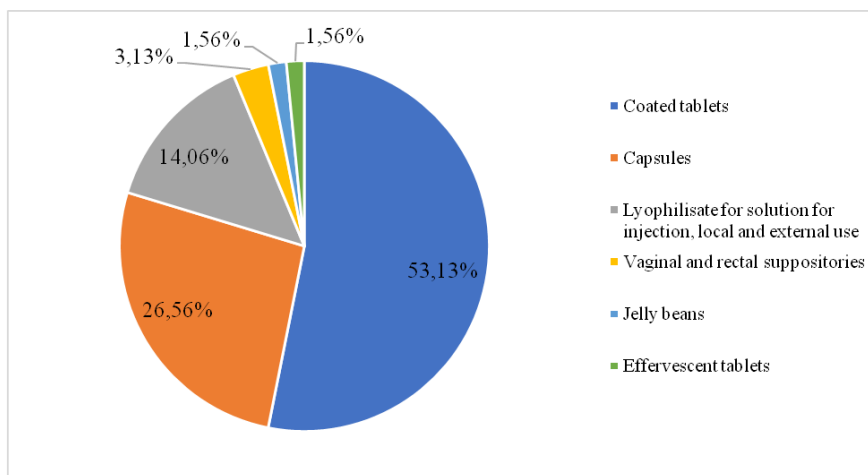


Figure 3: Market analysis of drugs containing enzymes by type of dosage form.

From the presented analysis of the market for drugs containing enzymes, it was found that the main view of

the dosage form for this group are coated tablets (53.13%).

## CONCLUSION

A structured content analysis of enzyme drugs was carried out by comparing quantitative and qualitative characteristics in accordance with following criteria: Pharmacotherapeutic group, dosage form, origin of the assortment of non-CIS countries, CIS countries and the Republic of Uzbekistan. A relatively large number of enzyme preparations of foreign production were identified (73%), of which drugs import substituting from the CIS countries (24%), from foreign countries (49%), and domestic (25%) and (27%) for the period 2017- 2019, which refers to the relevance of replacing import substituting drugs with drugs of local origin. The Republic of Uzbekistan has all the possibilities for testing scientific developments in practice and their implementation in production, and the implementation of innovative projects.

Medicines obtained on the basis of substances of local production must be of good quality, competitive and import substituting.

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