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Problem of working out the objective and subjective fundamentals of pharmacy

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ABSTRACT

We have shown the necessity of substantiation of the status of pharmacy as an independent science and theoretical comprehension of pharmacy as a system of scientific knowledge. Pharmacy should find the principles of theoretic unity of its knowledge in the specifics of pharmaceutical activity. We have carried out gnoseological analysis of the sphere of interests of chemistry, medicine, toxicology and pharmacy in the field of studying the drugs. Pharmaceutical aspects of a drug as an object of pharmaceutical activity have been shown. We have studied the regularities between the structure of a drug and the range of its biological activity in order to work out the methods of its analysis and synthesis. A drug is viewed as an object of analysis and synthesis in order to define its quality and 'behavior' in a human body. We have characterized the technological aspect of studying a drug. It has been noted that technical and pharmaceutical view on drugs manufacture is determined by biopharmaceutical factors. Only pharmacy views a drug as a product. We have defined product, ethic and ecological characteristics of a drug. We have worked out the scheme of pharmacy's subject and activity system formation. The main component of the system is a drug. The peculiarities of the subject of pharmaceutical activity and the tasks performed by a pharmacist define the specifics of a pharmacist's professional thinking and peculiarities of knowledge management in the system under study.

Key words: pharmacy as a science, subject determination of its borders, model of subject and activity system formation, drug as an object of pharmaceutical activity

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INTRODUCTION

Many sided research of a pharmacist's professional thinking, problems of pharmaceutical knowledge management, intellectual capital, professional ethics and deontology have become permissible after the recognition of the proposition of pharmacy's significant independence from the adjacent sciences [1].

Not sufficient development of pharmacy's gnoseology hampers the research of professionally important intellectual qualities, as solving of these problems is possible in the process of either formation of pharmacy's gnoseology or, at least, the development of medicine's gnoseology. Unfortunately, we have to state that in case of imposing the elements of fundamentality to pharmacy, it remains, even in comparison with medicine and natural sciences, the branch of knowledge which makes the first attempts of theorization of the different aspects of the science of remedies being 'crushed' in its disciplines.

We are not going to present the picture of the pharmaceutical science's development, it is not the aim of our research, but we will make the attempt of revealing vividly the main tendency of its development as a system of scientific knowledge.

EXPERIMENTAL SECTION

The science the interests of which range from studying molecular level of the drugs' organization to creating a theory of determination of the demand for drugshasn't raised upon the question of the essence of the regularities under study. This science also has no serious historical comprehension of its scientific way and well-developed specific and simple terminological apparatus. Among the theoretical principles usually distinguished in a science, pharmacy, to a certain extent, has only empirical principle leaving historical and formally logical ones free for research, possibly for an uncertain period. According to the evaluations of the development of thematic trends of the world pharmaceutical science, the faintest connection among all the sciences adjacent with pharmacy is between pharmacy and philosophy (scientific methodology of which is the basis of theorization process).

Meanwhile, from the point of view of determination of fundamentalization's perspectives, pharmacy, in our opinion, has good perspectives due to the close contact with fundamentally developed chemistry and potentially fundamental medicine.

The problem is in the initiative of the scientists and pharmacists in their craving to go out of the limits of their scientific trend and to get to know the experience of the other scientists' theorization, having started serious interdisciplinary research in the trend of creation the theory of pharmacy.

The correlation of the levels of scientific cognition at the different stages of its development in pharmacy is presented in the table 1.

Table 1. The correlation of the levels of scientific cognition at the different stages of its development

Stages of the development of scientific cognition	Aspectsofscientificcognition		
	Empirical	Theoretical	Methodological
0	e	(t)+	-
I	E+	t+	(m)+
II	E+	T	M
III	E+	T	M

E – well developed form of empirical research;
e – not developed or not enough developed form of empirical research;
T – well developed theory; t – not developed theory; (t) – theory at the embryonic stage;
M – well developed methodology, m - not developed or not enough developed methodology;
(m) – methodology at the embryonic stage.
The signs + and – show the presence of this aspect in pharmacy in our opinion.

The analysis of pharmacy's stages of development made by us have shown that according to the empirical aspect of scientific cognition pharmacy is at the highest, third stage of the development, but the theoretic aspect of cognition has just come from the zero stage to the first one. Methodological aspect (at the embryonic stage) is at the first stage[2].

The proofs of urgency of theoretic comprehension of pharmacy can be taken to the following arguments:
- Necessity of weighty grounds of the status of pharmacy as the independent one;
- Necessity of taking heterogeneous pharmaceutical knowledge to a united system in order of aimed process of its integration and differentiation;
- Necessity of working out specific and having one meaning terminology adequate to pharmaceutical activity.

Besides that, solving meta-scientific problems of pharmacy is necessary for successful teaching pharmacy, for grounding the rational scheme of training the specialists.

In the absence of the theory of cognition of the science at the basis of which the professional activity and the mental structure realizing it is formed, it is rather difficult to substantiate the purely professional and scientific point of view at such general categories as 'thinking', 'speech', 'emotions', 'ethics and deontology'. As professional thinking must have objective and purposeful determinacy (then the specific object of activity determines the way of its comprehension), the main goal of our research is working out the concept of subjective and objective basis of pharmacy.

In our opinion, the principal novelty of the way of theorization in the applied sciences is that their theory must be formed not like the theory of the certain range of objects, but the theory of the specific kind of subjective activity with the object, that is it must be not objective, but subjective theory.

Acknowledgement of a principle of independent meaning and essential independence of pharmacy from adjacent sciences becomes possible only in case of subjective determination of its borders.

Having analyzed the experience of theorization of the other applied sciences, we have come to the conclusion, that pharmacy must search the principles of theoretic unity of its knowledge (and cognition) in the specific pharmaceutical activity.

The main tendency of classification of sciences is the movement from the formal construct uncovering the external links between the sciences and their objects to unveiling their internal links.

In the past, each science had its own subject studied only by it. The science owned it, didn't interfere in the subjects of the other sciences and didn't permit them to interfere in its sphere.

For the first time the necessity to go out from this isolation and to start the interrelation with each other arises for the sciences in the case when one and the same subject (object) should be studied simultaneously from its different aspects, moreover, each of them is studied by the particular science. Now the subject performs as the indivisible unity.

By means of the method of logical analysis of the pharmaceutical activity, we have stated that the object of a pharmacist's professional actions and cognition is mainly a drug. By the drugs we mean the substances used for prevention, diagnostics and treatment of diseases, prevention of pregnancy, obtained from blood, blood plasma and also the organs and tissues of a human or an animal, herbs, minerals, by the methods of synthesis or biological technologies.

Professional and graphical analysis of pharmaceutical activity carried out by us according to J. Flanagan's method has allowed us to reveal definitely the subjective and aim orientation of pharmacy by means of its correlation with the notion of a drug [3].

A drug is extremely variable object in its qualities; it is a basis for studying many sciences. Each of them has its own object of research that is reveals those regularities of an object the knowledge of which provides the success in realization corresponding to its kind of activity.

In order to part objective grounds of pharmacy we have carried out logical analysis of the spheres of interests of chemistry, medicine, toxicology in the domain of studying the medicines. The following pharmaceutical aspects of studying the medicines are distinguished (table 2).

As you can see in the table, pharmacy studies a drug as an object of analysis (pharmaceutical, biopharmaceutical, phytochemical, microbiological, biological, toxicological ones).

While distinguishing the fundamental nucleus of pharmaceutical knowledge, to the greatest extent corresponding to pharmacy's profile the specialists all around the world mark chemical analysis and synthesis. The priority of the chemical sciences in pharmacy is undoubtful, but the tendency of bringing the pharmaceutical knowledge to the chemical one, requires the sufficient correction according to our point of view.

Table 2. A drug as an object of pharmaceutical activity

№	Aspect of the study of the object	The form of the study of the object	The aim of the study of the object
1	Structural	A drug as a pharmacological substance	Working out the methods of analysis and synthesis
2	Analytical	A drug as the object of analysis	Monitoring of quality, expertise, diagnostics
3	Technological	A drug as the product of manufacture	Working out the technologies of preparation, their pharmaceutical, biopharmaceutical, technological substantiation.
4	Marketing	A drug as the commodity and object of competition	Bringing the drugs to the consumer
5	Ethicalandecological	A drugs as the object of ethic position	National security and improvement of quality of life

Using chemical, physic-chemical and other methods of analysis, pharmacy among a number of sciences studies the regularities between the structure of a medicine and the range of its biological activity. However, the aims pursued by pharmacy in this case differ from the aims of pharmacology studying the structure of substance for determining

their pharmacological activity, or toxicology, studying the mutual influence of structure and toxicity. Pharmacy studied the structure of a medicine in order to work out the methods of its analysis and synthesis.

A drug is more than chemical or biological substance with therapeutic properties. Drugs are a subject of research and discoveries, the symbols of professional power, the instruments of national politics. They acquire the importance according to the status, hopes, social and cultural aims as well as the tendencies to view health as a commodity.

In general, analytical research of a medicine by pharmacy is connected with the determining the character and dimensions of deflexions arising in its normative functioning. In this case, the aims of analysis are divided into monitoring, expert and diagnostic ones. The quality of the medicine is subjected to pharmaceutical monitoring. Control of the medicines is carried out according to the peculiarities of their manufacture and specific qualities of a medicine as an object of analysis.

Expert analysis of a drug presupposes studying its 'behavior' in the human body or in the biological liquids while narcologic, doping, toxicological researches.

While clinical biopharmaceutical research a drug acts as an object of analytical diagnostics, presupposing the following: a choice of diagnostic means (or methods) for collecting the empiric data about the state of the system 'human body – drug'; analysis and generalization of the obtained data; carrying out the treatment together with the doctor.

Technological direction of science and action is traditional for pharmacy. In this case, a medicine as an object is examined in order to work out effective pharmaceutical, biopharmaceutical and technically grounded technologies of its preparation. A drug in this case is studied by pharmacy as a form of medicinal means (of medicinal substance or medicinal herbs as the raw materials) providing the realization of its pharmacological and trade abilities.

Technological and pharmaceutical aspect of the problem of manufacture of the medicines is conditioned by the following pharmaceutical factors: change of a kind of medicinal form and the ways of administering the drug, change of the nature and qualities of medicinal and auxiliary substances and so on.

One more character of a drug is a specific aspect of its studying by pharmacy. Only pharmacy 'examines' the drugs as the goods, endowing simultaneously pharmaceutical information about them with commodity qualities.

Except the common commodity qualities, a drug as a product is characterized by:
- Great social importance and individual character of usage;
- Greatvarietyofassortment;
- Low elasticity of demand and selectiveness;
- Limitedperiodofusage;
- Special principles of forming the stocks of goods, by the conditions of their storage and transport;
- Specialrequirementforquality.

Specific qualities of the drugs as the goods determine the peculiarities of the pharmaceutical market's functioning raising the special requirements for advertisement for methods of demand's formation and stimulation of sales, for marketing research.

Unlike the traditional market of the goods, at the pharmaceutical market it is impossible to provide the real sovereignty of a consumer because of his provision with unsufficient and non-professional information. It raises the dependence of the quality of pharmaceutical service on the professional competence and moral qualities of the specialists of medical and pharmaceutical service.

Having outlined a range of questions connected with theoretical comprehension of pharmacy's objective and subjective fundamentals, we have come to the conclusion that evolutionary changes of pharmaceutical activity have been determined by the development of the system 'a drug – a sick person – society'. A scheme of subjective and activity system formation of pharmacy worked out by us is represented in the Figure 1. The central component of this system is a drug.

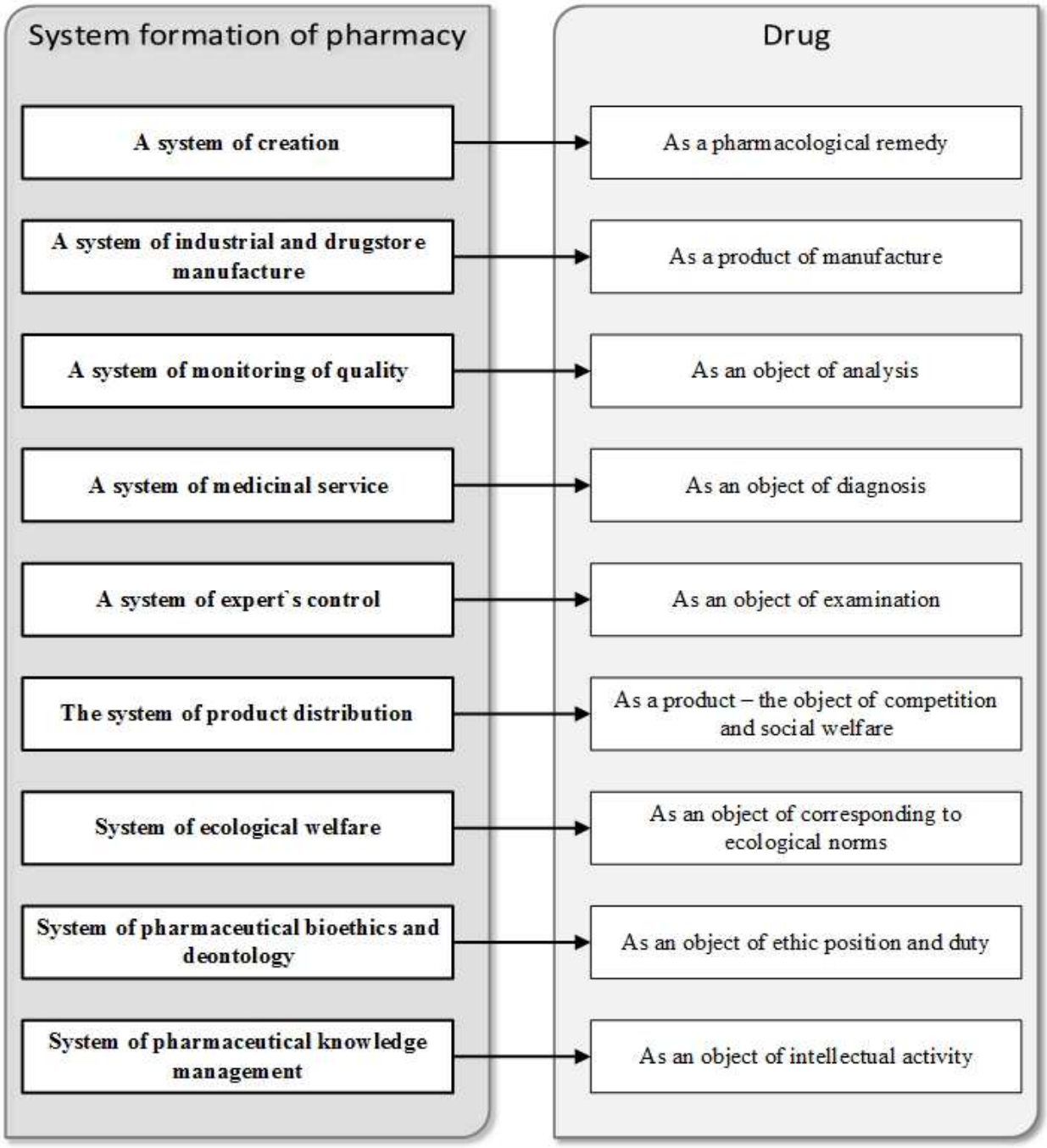

Figure 1. Model of subject and activity system formation of pharmacy

RESULTS AND DISCUSSION

The process of manufacture and trade turnover of a drug as a scientific and social product is closely connected with the problems of organization and management of the entire pharmaceutical activity according to its final aim. A notion of pharmaceutical service undoubtedly can claim for the central category of pharmaceutical marketing and management.

The peculiarities of the subject of pharmaceutical activity, tasks solved by a pharmacist, subjective and objective conditions of carrying out professional pharmaceutical activity define the specific features of a pharmacist's professional thinking. Separation of pharmaceutical thinking from the other forms and kinds of professional thinking doesn't interfere with the dialectics of the general and special. The general principles of the human thinking refracting through the prism of pharmaceutical activity define the norms and rules (methodology itself) of the effective labor of the pharmacists.

CONCLUSION

We realize that we haven't completely characterized the complex approach to a drug as the object of a pharmacist's activity and the ways of working out this approach. To be more exact, we were able to show the general outlines revealing the direction of working out this approach. But it is a significant and rather independent work going out of the limits of our topic and demanding a particular research.

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