

УДК 811.124

DUAL NATURE: POTENTIAL RISKS OF TREATMENT WITH MEDICINAL PLANTS

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Modern society is developing at an incredible speed. Technology is constantly in progress too. People have learned how to synthesize complex substances and create medicines acting at the genetic and molecular levels, so nowadays medicine has made the great growth. The development of pharmaceutical and chemical technologies has led some people to the fear of anything synthetic, chemical or unnatural. In most cases, pharmacopoeia, being the fear of taking remedies – is due to the previous unpleasant experience or people education lack in medicine. Therefore, medicinal plants are now widespread in the treatment of different diseases. However, there is the dual nature of medicinal plants usage – they can have both positive and negative effects on the human body. It is believed that traditional medicinal plant treatments have become widespread due to rising drug prices. “Traditional medicine treatment is increasingly gaining popularity: if back in 2022 this share of the population in Russia was 10%, then in 2023 this percentage has already increased to 14% and continues to grow further” [2].

The relevance of the work is due to the problem of improper medicines usage obtained from plants, because of the people desire spread for self-medication with the help of folk remedies.

The practical significance is in the use of work by medical personnel of various profiles in order to carry out sanitary educational work among the population. According to orders of the Ministry of Health of the Russian Federation No. 295 dated October 6, 1997 “On improving the activities of health authorities and institutions in the field of hygienic training and education of the population in the Russian Federation” because sanitary education is the magician’s requirement.

The purpose of the article is to inform population about the self-medication danger of using medicinal plants. To reach the following purpose we have made some tasks:

1. Study the principle and origins on which traditional treatment methods are based.
2. Find out what effect plant components can have on the human body.
3. Conduct a survey about trust in traditional medicine methods.
4. Make conclusions about the danger of uncontrolled use of traditional medicine methods.

Traditional medicine is a complex of knowledge, skills and abilities that are passed down from generation to generation and which do not always have the scientific and logical basis, used for the prevention, diagnosis, treatment of diseases and medical rehabilitation. The practical methods of this type of treatment are closely related to the concept of pharmacognosy, which is the science of medicinal raw materials of plant and animal origin, which originated in the distant past. The main work by Dioscorides “About medical remedies”, where he systematically described all the medicines of plant, animal and mineral origin, known to modern science developed the pharmacognosy as a science [1].

The usage of medicinal plants was a key method of treating diseases before modern medical technology appearance [3]. In the past doctors adhered to the ideology known as the “The signature Doctrine”, which is held that each disease could be cured by a specific plant. At the same time, the choice of plant for treatment was carried out on the basis of the similarity between its appearance, growing conditions and symptoms of the disease. For example, St. John’s wort (*Hypericum* по лат.) leaves have translucent holes or “wounds” in the membranes of vascular cells, which are colored reddish due to the pigment hypericin. It is believed, that this very property makes it effective to treat wounds. In some cases, this approach may have unintentionally promoted plant stewardship, as happened with the use of willow to treat rheumatism [5]. This method arose much earlier than pharmacology and it is believed that it is the basis of all traditional medicine because it is based on the experience and the assumptions about the effects of certain plants on the body.

To study the attitude to the diseases treatment with the help of medicinal plants, the survey was done among the first-year students of Pediatric department at Kemerovo State Medical University. Fifty-one students participated in the survey. As a result, we could find out which traditional methods or remedies are widely used and how many students trusted them, as well as what proportion of medicinal plants occupy them.

From the diagrams in Figures 1 and 2 it is seen that medicinal plants occupy the leading position among traditional medicine methods. This is justified by their prevalence, variety and low cost, that is the undoubted advantage comparing with many other drugs, dietary supplements and homeopathic remedies.

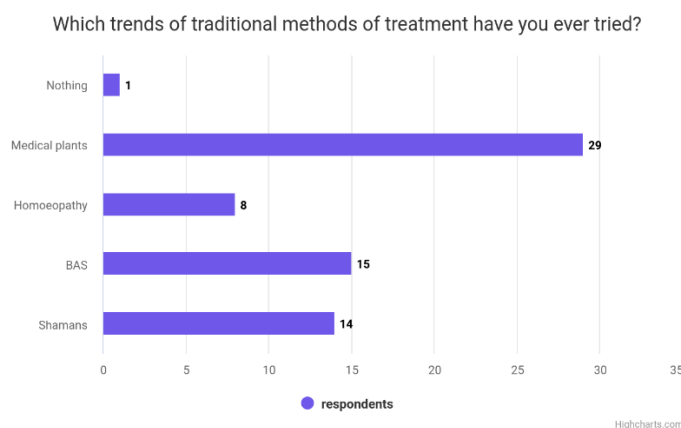


Fig.1. Survey results: the most popular trends of traditional treatment methods

As for the personal reasons of choosing the traditional methods of treatment, the most popular answers were “accessibility”, “cheapness” and “method diversity” (Fig. 2).

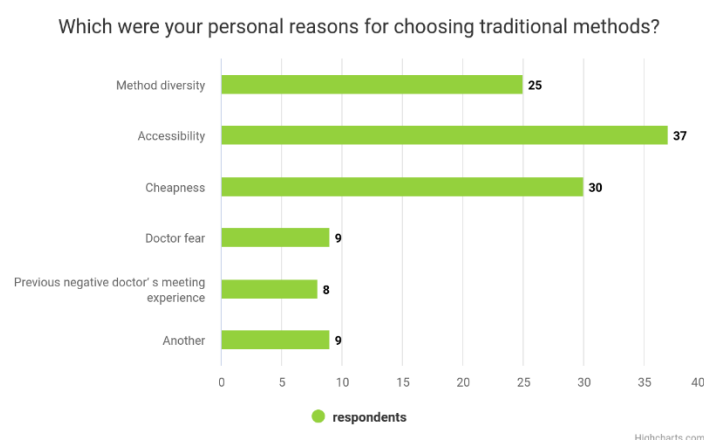


Fig.2. Survey results: personal reasons for choosing traditional methods

Having asked survey questions about seriousness of medicinal plants usage for disease treatment, we find out that the majority of respondents do not really believe that there is a great risk of using them (Figure 3). They surely think there is no need to consult to a specialist about the usage of medicinal tinctures and decoctions (Figure 4). Moreover, they are sure that all medical plants are safe. Although 29.4 % of students follow doctor's recommendation and try to study the negative effects before taking medicinal herbs.

Have you ever thought about the potential risks before using medicinal plants?

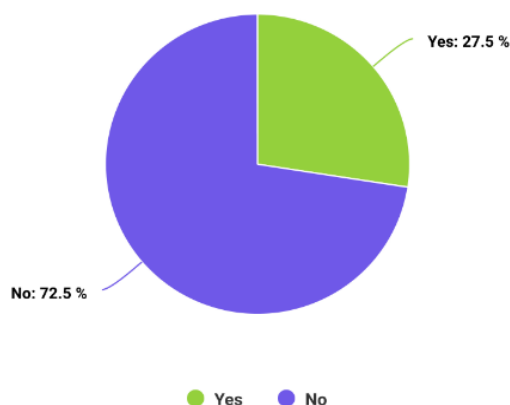


Fig.3. Survey results: potential risks before using medical plants

Have you ever consulted with you doctor before using medical plants?

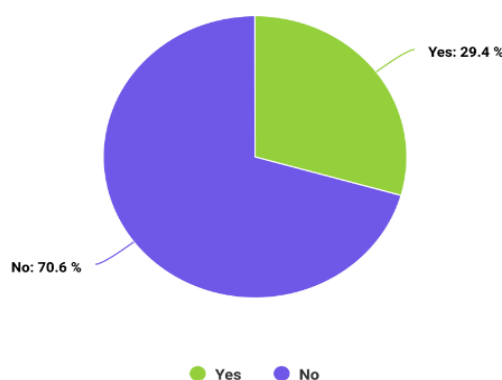


Fig.4 Survey results: doctor's consultation before using medical plants

From the survey, we can see that the most people treat themselves with medicinal plants with a small degree of caution, mistakenly considering it is harmless, and only some of the respondents think that people should use these methods of treatment with responsibility and caution. The recipes for ointments, decoctions, infusions from various diseases are passed down from generation to generation among people and being distorted, they can begin to carry a disinformation character, even if they initially carried some benefit. In the best case, such methods may have only additional therapeutic or symptomatic effects, or they may not affect the body at all. In the worst case, they can poison a person even more. People who are unaware of dangers of using certain substances may not only fail to cure their disease, but also worsen their condition.

It should be noted that herbal ingredients are extremely allergenic and they have many negative effects compared to synthetic or semi-synthetic ones, because the latter undergo a multi-stage path of preclinical and clinical trials during development, the purpose of which is to minimize the risk of developing allergies and adverse reactions. The unpredictable effect is due to the individuality of the human body especially if the infusion or decoction contains several plants at the same time, since it is not completely known what chemical compounds can be formed in various combinations.

The plant world has been studied worse than pharmacological remedies. Therefore, even doctors cannot predict the results of herbal therapy. For example, cardiac glycosides – is the complex of nitrogen-free compounds of plant origin having cardiotonic activity. These substances were actively used in folk medicine for a decongestant effect and the treatment of heart ailments; they are found in foxglove, spring adonis, lily of the valley, jaundice, and strophanthus. For a long time it was believed that this component is relatively safe and really helps with cardiac pathologies. Later it turned out that the effect on the sympathetic tone of the heart muscle, although it causes a positive effect, later increases the risk of developing heart failure, ventricular arrhythmias, etc. [6].

It is considered that people underestimate the danger of substances contained in the herbs they are familiar with. Moreover, they blindly rely on the experience of

their ancestors and people around them. The use of medicinal plants for treatment has a dual nature, where, on the one hand, it is a natural and accessible way to treat various diseases, and on the other hand, it is potentially dangerous if the necessary precautions are not taken. Therefore, the stricter quality control measures, testing and standardization of herbal medicines, and more in-depth research to evaluate their effectiveness and safety are needed. Therefore, society now needs knowledge about the use of plants to treat various diseases. The media, paramedics, doctors and medical personnel should conduct educational work in this area, since the population, not realizing the full danger of such treatment methods, will continue to trust “grandmother’s” recipes, which not only will not help cure the disease, but can also harm their own body.

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