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# DEVELOPMENT OF AN INTEGRATED METHOD FOR IMPLEMENTATION OF FOOD DIETS TO MEDICAL AND HEALTH INSTITUTIONS

Об'єктом дослідження є споживчі переваги відвідувачів, вимоги фізичців у сфері науки, виробництва та організації харчування. Існуючі рішення, з якими відвідувачі харчуються в санаторіях і профілітаріях, вимагають певної корекції. Перспективним шляхом є розробка спеціалізованих харчових кулінарних структур з них, які успішно інтегровани та використовуються, опираючись на величезний досвід фізичців у сфері науки, підприємств виробництва та організації харчування. Такий підхід вирішення проблеми найбільш ефективний та економічно доцільний, про що свідчать накопичений досвід і досягнення сучасної нутриціології. В ході дослідження використовується метод синектики, зокрема його творчість фізичців сфери науки, виробництва та організації харчування. Було сформовано 4 робочі групи по 10–15 осіб у кожній. Науковці – працівники Хмельницького державного університету харчування та торгівлі, Хмельницького національного університету імені В. Н. Каразіна, Національного університету «Львівська політехніка» та Інституту стратегічного розвитку імені В. Чорновола у м. Львів (Україна). Виробники – колекційний розсадник культур «Агротек» у м. Київ, хлібокомбінат «Куліничі» та «Славський м'ясокомбінат» у м. Хмельницький (Україна). Організатори харчування – санаторій «Борисфен» у м. Бердянськ, Інститут нейрохірургії імені академіка А. П. Ромоданова Національної академії медичних наук України у м. Київ та Львівська обласна організація всеукраїнської екологічної ліги (Україна). Споживчі – відвідувачі лікувально-оздоровчих установ, які користуються послугами 1,2 раз на рік. В рамках дослідження з проведеного інтегрованого методу впровадження, який буде сприяти підвищенню ефективності використання наукових розробок. Це дасть можливість створити механізм взаємодії діяльності науковців із виробництвом та учасників процесу організації харчування із кінцевим споживачем. Завдяки чому буде забезпечено тисяч вирішення проблеми з глибоким знанням, що пов'язане з незалежними рішеннями харчування.

**Ключові слова:** інтегрований метод, оздоровчі харчування, метод синектики, споживчі переваги, організації харчування.

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## 1. Introduction

Nutrition is of great importance in the system of preventive measures to reduce disorders in the human body [1]. The need to develop food rations and their introduction on the basis of sanatoriums and dispensaries of medical institutions is confirmed at the level of decrees of the President and resolutions of the Cabinet of Ministers of Ukraine [2, 3]. Existing diets, according to which visitors eat in sanatoriums and dispensaries, require immediate correction [4]. A promising way is the development of specialized food culinary dishes and rations from them, which are successfully integrated and used, based on the mutual experience of specialists in the field of science, manufacturing enterprises and catering. This approach to solving the problem is the most effective and economically feasible, as evidenced by the accumulated experience and achievements of modern nutritiology [5, 6]. The absence of a mechanism for the interaction of the actions of developers of specialized products with participants in the catering process in medical institutions leads to low efficiency of the use of existing scientific developments [7].

It is important to determine the goals and objectives of the process participants for their further integration within the framework of the system «science – production – catering – consumer». An integrated approach remains poorly understood, including the integration of specialized products in diets in sanatoriums and dispensaries. In this regard, the identification of participants in the process of developing and rationalizing nutrition in medical institutions is relevant and timely. Thus, *the object of research* is the consumer preferences of visitors, the requirements of specialists in the field of science, production and catering. And *the aim of research* is to develop an integrated method for creating specialized products for the correction of diets of medical institutions based on system elements: «science – production – catering – consumer».

## 2. Methods of research

Studies on the development of an integrated method of introducing food rations into health-improving institutions were carried out using the synectic method [8–10]. This method is based on the work of specialists in the field of

science, production, catering and consumer. During the study, 4 working groups of 10–15 people each were formed.

Scientists are employees of Kharkiv State University of Food Technology and Trade, V. N. Karazin Kharkiv National University, Lviv Polytechnic National University and V. Chornovol Sustainable Development Institute in Lviv (Ukraine).

Producers are the heads of the Agrotek collection agricultural nursery in Kyiv, the Kulinichi bakery and the Saltovsky meat plant in Kharkiv (Ukraine).

Food Organizers:

- director, chief physician, nutritionist, chef of the Borisen sanatorium (city of Berdiansk, Ukraine);
- chief doctor, nutritionist, head of the canteen of the Institute of Neurosurgery named after academician A. P. Romodanov of the National Academy of Medical Sciences of Ukraine (Kyiv, Ukraine);
- heads of the public organization «Lviv Regional Organization of the All-Ukrainian Ecological League» (Lviv, Ukraine).

Consumers – visitors to health facilities using the services 1–2 times a year.

The working group is selected according to criteria such as practical experience, flexibility of thinking, and significant experience in this field. Having developed certain collaboration skills, the study participants held discussions on issues and issues that concern each working group, and issues that spontaneously arise during a conversation are also discussed. Each working group shows the weaknesses of the solutions and clarifies the essence of the true problem. After that, an analysis of the problem is carried out: each participant found and expressed ways to solve this problem from their point of view. Using analogies and transferring tasks that arose to ready-made solutions that exist in various fields and areas, ways are found to solve existing problems through the use of new ideas [11].

### 3. Research results and discussion

The sequence and characteristics of the stages of the integrated method of introducing food rations into medical institutions based on the system «science – production – catering – consumer» are shown in Table 1.

Proposed in the Table 1 the scheme of the integrated method of introducing food rations in health facilities begins with the generation of ideas. The basis of this idea is a problem of national importance, associated with an unbalanced diet and bad consequences for modern generations.

Members of the «Scientist» group raise issues of nutritional imbalance. Members of the «Organizers of Nutrition» group offer solutions to this problem in terms of knowledge about micronutrient deficiency and their digestibility by the body. Members of the Consumers group formulate requirements for food products, culinary dishes and food rations. Members of the Manufacturers group offer technological solutions to the problems that arose in the analysis of consumer preferences. The tasks for the «Scientists» working group are being established. Participants of all working groups analyzed the actual diet in medical institutions. Based on the principles of nutrition and production technology, the composition of food recipes and rations based on them is being designed.

At the second stage, marketing research is carried out. It is investigated which group of products is most in demand

among the respondents and the lack of which is felt by the consumer most of the functional and health-improving ingredient. After conducting market research, new products are designed taking into account technological and medical recommendations.

**Table 1**

Integrated rations introduction method in medical institutions based on the system «science – production – catering – consumer»

Method stages	Stage characteristic
Generating ideas based on advances in nutrition	Analysis of actual nutrition in health facilities. Designing the composition of food recipes and diets based on knowledge of micronutrient deficiency and their digestibility by the body
Marketing research	The study of consumer preferences of visitors to medical institutions regarding food products, food rations to establish consumer requirements for the design of new products, taking into account technological and medical recommendations
Developing a new enriched prescription ingredient	The study of indicators of quality and safety of raw materials and the degree of preservation of enriching substances in a new prescription ingredient. Development and justification of the prescription composition of food products of leaders according to consumer preferences. Research indicators of the quality of developed products
Assessment of the quality and safety system of new products	Development of management systems in accordance with international standards and rules to ensure the stability of the quality of new products in production
Introducing new products into consumer diets	Development of a program and guidelines for rationalizing the nutrition of visitors in medical institutions. Implementation of cafes, restaurants, sanatoriums, dispensaries, hospitals
Efficiency assessment	Clinical studies of the biological effectiveness and health-improving orientation of developed products and food rations based on them

In the third stage, a new food ingredient is developed. The main requirements for the developed food ingredient are safety, a healing and therapeutic effect, the usual organoleptic characteristics, a rational amount of enrichment in an easily accessible form. As well as the possibility of its use in the preparation of a large number of culinary dishes.

The quality indicators of the developed ingredient are investigated, and in vivo testing is carried out. After that, the development of the prescription composition of the food products of the leaders according to consumer preferences occurs, the percentage of the daily requirements for fortifying substances is substantiated. According to the current regulatory and technical documentation, the quality indicators of the developed products are investigated. At the fourth stage, an assessment is made of the quality and safety system of new food products. A management system is being developed in accordance with the requirements of international standards and rules to ensure the stability of the quality of new food products. The next stage is the introduction of new enriched products in the diets of consumers. Programs and guidelines for rationalizing the nutrition of visitors in health facilities are being developed. The final stage is to evaluate effectiveness. On the basis of medical institutions, studies are conducted of the biological effectiveness of the developed food ingredients, food products and rations based on them.

#### 4. Conclusions

Within the framework of the study, an integrated method for creating specialized products for the correction of diets of medical institutions based on system elements is developed: «science – production – catering – consumer». An interpretation of the synectic method is carried out in the conditions of the organization of scientific institutions that ensure the integration of the development of a new food ingredient, product and rations based on them. The proposed method will help increase the effectiveness of the implementation of scientific research and will create a mechanism for the interaction of developers of specialized products with production, participants in the catering process and the end user.

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