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## **PERSPECTIVES OF THE DEVELOPMENT OF CURD PRODUCTS OF GERO-DIETIC FOOD**

***Аннотация:** питание является важной составной частью здорового образа жизни и во многом определяет состояние здоровья человека. С возрастом замедляются процессы обмена веществ, снижается приспособляемость организма, его сопротивляемость и способность к регенерации. Функциональные нарушения, структурные и метаболические изменения, развивающиеся в организме пожилого человека, требуют от него более внимательного отношения к питанию. Приоритетом и важным заданием геронтологии является продление периода активного долголетия.*

***Abstract:** eating is an important part of a healthy lifestyle. The quality food and the optimal balance of nutrition are the main index of rational eating. The necessity of the old people to maintain nutritious properties is defined by the age peculiarities of metabolism and lifestyle of this age period. To supply the body with a sufficient amount of replaceable and irreplaceable amino acids, the diet should have proteins of both animal and plant origins in the ratio 1:1. The priority and major task of the gerontology is to extend the period of an active longevity and improve the quality of life for elderly people.*

**Ключевые слова:** растительное сырье, геродиета, геродиетическое питание, животное сырье.

**Keywords:** gero-diet, gero-dietic food, plant raw food, raw food of animal origin.

Eating is an important part of a healthy lifestyle. It defines the health condition of man.

The demographic situation of the last decades is characterized with the increasing number of middle-aged and elderly people, in other words, an aging population.

Longevity in the developed society is the norm; there is a consistent tendency now for an increase of life expectancy. In his «Speech to the people» the President emphasized that a healthy way of life will prolong life up to 80 years and more. One of the main principles of a healthy way of life is a correct diet.

In middle and old age there arise some functional and other changes in all the body systems. Exchange processes of an organism slow down, body adjustments reduce, its protective and regeneration processes drop. Structural and metabolic changes, functional disorders that are happening in the body of an aged man demand that he should be more attentively to his diet.

The quality food and the optimal balance of nutrition are the main index of rational eating. The necessity of the old people to maintain nutritious properties is defined by the age peculiarities of metabolism and lifestyle of this age period. To supply the body with a sufficient amount of replaceable and irreplaceable amino acids, the diet should have proteins of both animal and plant origins in the ratio 1:1.

The need of vegetable oils increases in elderly peoples diet. Vegetable oils consist mainly of polyunsaturated fatty acids (linoleic and linolenic), that are needed for normalization of lip cholesterol exchange; the latter, when referring to old and elderly aged people, is quite often affected [1].

In the diet of elderly people the ratio of proteins, fat and carbohydrates should be altered – carbohydrates and fats should be decreased – 1:0,8:3,0–3,5. The general daily energetic value for this group of population must be 2400–2800 kcal [2].

A poor diet and low physical activity are the main factors in the development of various illnesses. At present, according to statistics, there are 1,255,837 elderly people in Kazakhstan, these are the people older than 64 (men: 429 941 / women: 825 895).

According to UN forecast, this age group will keep increasing and by 2025 it will exceed 1 billion people throughout the world. On one hand, this factor is a positive result of the development of human society, as the increase of the ratio of the pensioners in the general number of population is a good demographical index of economically developed countries. But it has a different side too: the difference between a natural growth of the population and a constantly increasing number of elderly people. In the developed countries the aging of the population is mainly connected with the increase in longevity of life, which reached 80 years and more (though according to the old forecasts, to 2000 the average longevity should have reached 92 years). In the European Union countries the expected period of life for men will be 74–77 years, of women 80–82 years [3].

The priority and major task of the gerontology is to extend the period of an active longevity and improve the quality of life for elderly people.

The aim that could be reached/ the challenge that could be solved in the near future is to extend the limits of a human biological age, that is to 90 – 100 years. And if not everyone can reach this higher age level then this is due to early aging caused by not following the optimal way of life and mainly due to the peculiarities of their diet.

Among the factors influencing the length of life of man is food, which is the simplest and most affordable method of impacting the length of life.

During the whole history of a human existence, food was always the strongest and the most stable factor constantly influencing his health condition. As a famous gerontologist academician D.F. Chebotarev said «eating is practically the only means that can prolong the length of life for 25–40%».

The founders of the scientific school of creation of balanced gerodical products are Antipova L.V., Bogatyrev A.N., Grigorov Y.G., Kozlovskaya S.G., Zaitsev A.N., Kasianov G.I., Samsonova M.A., Chebotarev D.F., Nechaev A.P., Lipatov N.N., Yudina S.B., Ovcharova G.P., Pokrovsky A.A., Roslyakov Y.F., Samsonov M.A.,

Skurihin K.M., Spirichev V.B., Timoshenko K.V., Ugolev A.M., Ustinova A.V., Kharitonov V.D., Shazzo R.I., Zaporozhsky A.A.

According to these experts' estimations, the health of the nation depends on the system of the public healthcare only by 8–12%, while on the social and economic conditions and a lifestyle is by 52–55%, one of the main factor of the latter is food [3].

The main diseases of man causing death is atherosclerosis, ischemic heart and brain disease, hypertonic disease, cancer, diabetics; these usually occur in the second part of man's life cycle. Aging is also characterized by a constant reduction of normal functioning of the bodies organs and systems, decreasing in the ability to adapt to different changes that inevitably and continuously appear during the life period. It indicates that the means that help to slow the pace of aging of man could be the most effective method of prevention of major diseases of man due to his age and help to delay the timing of there occurrence.

It is known that food can be a positive factor that helps preserve the health of the elderly, but at the same time it can have the opposite effect and have a negative influence on health.

During the last decade the new scientific branches have been established: gerontology (the study of old age), geriatrics (the science that study the peculiarities of diseases of an old age) and gerodietics (the science that study peculiarities of food consumption of old people).

Gerontology is a part of the bio-medical science that studies the aging of a human body.

The research conducted by the scientists of many countries including Russia, confirmed that more than 600 different substances (nutrients) should be digested with food to supply the body with not only the energy, major food substances, micro and macro elements, but with also other components (that still need to be researched).

The major principles of creation of gerodietic products are:

- balance of all or some components of finished products;
- content of bioactive substances;
- hygienic safety of a product;

- high consuming properties;
- absence of unsuitable organoleptical marks in a product.

According to the data of foreign and home researchers, due to the properly balanced diet, one could reduce the number of diseases (diabetes by 30%, arthritis by 50%, heart diseases by 25%, organs of vision by 20% and so on) and considerably reduce the risks of premature aging. Due to this reason, it is necessary to establish the industry of the specialized food products with specially declared properties [3].

The scientific ways of the creation of new gerodietic products can be divided in accordance with the following directions:

First – the creation of the fully balanced products that comply completely with the needs of human bodies of old people.

Second – the products, aimed at correcting a diet. This direction means to create the products enriched with one or several nutrients.

Third – the food modules (pre-mixes), that allow control of food consumption either eating one or several meals a day. This group of food supplements, apart from enriching the diet, will allow control of synergetic properties of the products components.

Forth – the creation of the products enriched with bio-active components that can enforce or add definite properties to a product. This type of products is widely available in the economically developed countries.

Fifth – the products promoting the prevention and treatment of geriatric diseases. Topicality of creation of these types of products presumes that geriatrics that study the peculiarities of treatment of diseases of old people, pays special attention to the specialized nutrition [2].

The necessity of enriching the food products with not only vitamins but also with other insufficient micro-nutrients: mineral substances, alimentary fibres, polyunsaturated fatty acids, phospholipids, as well as biologically active additives of natural origin that raise the resistant abilities of human bodies was proved [3].

Due to everything said above, the priority direction is the perfection of existing and working out of the new technologies of enriched food products for people of old age; that includes enrichment with macro and micro nutrients [4].

The home/inner food processing industry produces hardly any special food products aimed at older people. Modern technologies of food production do not pay enough attention to the needs of the diet of older people. The main reason is the lack of knowledge about the changes of metabolic peculiarities of human organs during the aging.

The traditional products even if they comply with the norms of consumption, do not supply a human body with all nutrients necessary for normal life.

The modern tendency of perfection of food products is focused on the creation of food and biologically balanced products enriched with functional ingredients. The most popular and perspective is considered to be the way of a targeted combination of dairy and vegetable raw materials. In the products with the compound raw material composition, dairy and vegetable raw materials are used in the different combinations; that allow forming the needed functional properties, taking into account the habits and traditions of a food culture of the population of different regions [3].

Vegetable raw materials are rich in the functional ingredients, first of all, of vitamins and mineral substances; it contains an ascorbic acid, R-active substances, organic acids and pectin substances.

The natural nutrients contained in vegetable raw materials allow use of them to create the products of prevention and healthy orientation. In the food processing industry, nowadays it is important to create the products that have a therapeutic effect. This issue can be sorted if working out the technologies of the combined food products using vegetable raw materials. Thus, it is very topical to produce new types of food products with the high content of biologically valuable substances due to the proper vegetable raw materials selection.

Modern research is aimed at the creation of new dairy and meat products that will provide the population with delicious and safe food products. For their development secondary raw materials are used as they have an abundant amount of substances that

have an important physiological meaning which are important in relation to the biological needs of a human body [5].

Nowadays it is well-known that the mullet is very useful. Talkan preserves all its good qualities in full. It contains the important vitamins and micro-elements that participate in the exchange processes. The main feature of talkan is that it improves the functioning of the digestive system. It eliminates digestive malfunction, abdominal distension, constipation. Moreover, this product absorbs all the toxic substances from the body, thus, purifying all the body organs. Talkan is recommended by dieticians as a fully dietary product. It clears the body from the intoxication due to its unique properties. When taken regularly, it will prevent from hair loss, improve skin and nails condition. Talkan is rich in fiber that improves the functioning of the stomach. The product is called a modern diet; this is partially true as it can be either a separate meal or a side dish to different meals and even deserts. The research of talkan shows that the treated mullet is better digested. All the vitamins, micro and macro-elements are fully consumed and digested when mullet is consumed after being treated [6].

Described above, the peculiarities of older people should be taken into account when working out the specialized food products for this group of the population.

The changes that take part in a human body when getting older oblige people to change their diet but unfortunately, the modern way of life man does not always have a correct diet. Very often he eats in a hurry; products can contain high quantity of fat, cholesterol and different synthetic supplements that do a lot of harm to the elderly. This is why scientists have the serious task of creating gero-dietic products. Specialized products should not only supply all the needs of an organism but also preventing different diseases such as cardio-vascular diseases and cancer. One more important criteria of creating these products for the elderly is there easy digestion and assimilability. These demands are determined by reduction with age of digestive fermentation activity. An attractive outlook and aroma of food

At present the assortment of gero-dietic products is very limited; and its main part is the dairy and baked products.

The creation of the new products involve a comprehensive approach to the use of the protein resources with the provision of the increase of the volumes of produced food products, improvement of their quality and the economical effectiveness of the production. The right food in old age will help slow down the aging process and increase the active longevity.

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