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### COMPOSITION OF A BALANCED KUPAGE OF PLANT OILS

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**Annotation.** Vegetable oils consist mainly of three types of fatty acids in different proportions, called saturated, monounsaturated, and polyunsaturated. Omega-3 and Omega-6 essential polyunsaturated fatty acids, which the body cannot synthesize, must enter the human body through food. It is also important to maintain a proper ratio of Omega-3 to Omega-6, which should ideally be 1.5:5, as excessive Omega-6 without sufficient Omega-3 can cause chronic inflammation. The composition of vegetable oil coupage has a positive effect on the taste and aroma properties of oil and fat products, as well as on the biological effectiveness and consumer characteristics of individual oils. The purpose of the work is to create a balanced mixture of vegetable oils in a specific ratio with the introduction of traditional and non-traditional vegetable oils for the population of Uzbekistan. The authors compiled a cluster of vegetable oils based on the daily intake of mayonnaise and Omega-6 for an adult. The use of vegetable oil blends is relevant, as oils contain many biologically active substances that have a beneficial effect on human health as a whole.

**Keywords.** Vegetable, oil, Omega-3, Omega-6 ratio, fatty, acid, coupling, traditional, non-traditional, balanced, health, daily, norm.

In our time, most of the vegetable oils sold are extracted from plant seeds by pressing, extraction, and treatment with volatile organic solvents. This method is very effective at maximum extraction, as it provides higher yields but requires further steps to neutralize oil from potentially toxic chemicals. In addition, to improve the quality of oil for consumption, it is refined. These processes make the production of vegetable oil economically profitable.

It should also be noted that the amount of fatty acids, vitamins, and minerals in vegetable oil is determined by their level in the soil where the plant was grown and the methods of farming.

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Incorrect care of plants can lead to the fact that the composition of such oil will be significantly worse [1].

Vegetable oils consist mainly of three types of fatty acids in different proportions, called saturated, monounsaturated, and polyunsaturated. Some of the fatty acids present in the human body and absolutely necessary for life are not produced in the body, but can only enter from outside. That is why they are called irreplaceable.

The most beneficial fatty acid in vegetable oil can be called the oleic acid Omega-9, which is found in vegetable oils, as well as essential polyunsaturated fatty acids Omega-3 and Omega-6, which the body cannot synthesize, therefore they must enter the human body with food. Oleic acid contributes to the health of the cardiovascular system, and Omega-3 and Omega-6 are important for the normal functioning of the human body, including the anti-inflammatory properties of Omega-3 and the functioning of the skin with the participation of Omega-6. It is also important to maintain the correct ratio of Omega-3 to Omega-6, which should ideally be 1.5:5, as excessive Omega-6 without sufficient Omega-3 can cause chronic inflammation [1, 2].

Food-grade clusters of vegetable oils are as follows. Single-grade cupages - mixed oils of the same type but different grades. Coupades of various oils - mixtures of cottonseed, sunflower, rapeseed, olive, corn, flax, and other oils.

The purpose of obtaining a cluster of vegetable oils is to achieve a unique taste, aroma, and balance of nutrients in the food product.

Over the past 100-150 years, the consumption of Omega-6 fatty acids has increased significantly. A typical type of nutrition for modern humans is accompanied by an excess towards Omega-6. In Europe and the USA, the ratio of "Omega-3:Omega-6" is 1:3, while for those who adhere to the diet type, this ratio is 2:1. The World Health Organization recommends a higher quality ratio of Omega-3 and Omega-6 polyunsaturated fatty acids, which is 1,5:5 [3].

Each vegetable oil contains its own unique set of fatty acids, minerals, vitamins such as vitamin A, D, E, Omega-3, 6, and 9 and also has its own unique nature. Therefore, depending on the type of oil, additional benefits can be obtained to provide the human body with the necessary substances.

The composition of vegetable oil coupage has a positive effect on the taste and aroma properties of oil and fat products, as well as on biological effectiveness and consumer characteristics compared to individual oils. A variety of vegetable oils allows you to simultaneously enrich the human body with various beneficial substances, improve the taste of dishes, and select the oil for specific purposes. For example, linseed oil is rich in Omega-3, corn oil is an absolute record holder in terms of vitamin E content, reduces cholesterol levels, and cotton oil contains calcium, iron, magnesium, phosphorus, potassium, and others. Differences in the composition of oils affect their beneficial properties and application, they are better used for salads, sandwiches, and for frying [3].

In 100 grams of sunflower oil, there are about 60 grams of Omega-6, 0.16-1 grams of Omega-3 and it is the "king of cuisine" in all countries of the world. It can also be used for the body, for masks, massage, and for cooking. In terms of price and quality, sunflower oil is the best option for everyone who takes care of their health, but currently cannot afford anything more effective. A characteristic feature is the high content of lecithin. This substance, which is a compound of phospholipids and triglycerides, has a beneficial effect on the liver, stabilizes the nervous system, and helps fight stress [4].

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Linseed oil with a high Omega-3 content of up to 45% is 43-45 grams, Omega-6 up to 25%, which is 15-25 grams per 100 grams of oil, vitamins A, E, B, and P. It well strengthens the immune system, stimulates insulin production, and regulates the endocrine system. Doctors recommend consuming linseed oil for patients with diabetes and those suffering from acute and chronic gastrointestinal diseases.

Corn oil is an absolute record holder for vitamin E content, in 100 grams of oil it can be around 14.3-18.6 mg, twice as much as in olive oil. Polyunsaturated fats, tocopherol with retinol and thiamine are also sufficient. Omega-6 in it is 50-57 grams, Omega-3 is 0.6 grams to 1.16 grams. The oil is well absorbed and helps fight liver and digestive system diseases. It also accelerates metabolism and lowers cholesterol levels.

Corn oil is a dietary product. But this doesn't mean it shouldn't be used for frying or roasting. On the contrary, it is a good complement to the first and second courses.

Cottonseed oil contains Omega-6 and Omega-3 fatty acids, with Omega-6 accounting for up to 50% of its fatty acid composition, 100g of the product contains 40-50g of Omega-6, Omega-3 in it is 0.2g. Although it is rich in Omega-6 mainly linoleic acid, the amount of Omega-3 in it is very low, making it unbalanced for these fatty acids.

The content of the Omega-3 and Omega-6 fatty acid groups in 100 grams of vegetable oils is presented in Table 1.

Table 1.

Content of the Omega-3 and Omega-6 fatty acid group in 100 grams  
vegetable oils

| № | Name of vegetable oil | Content of Omega-3 fatty acid group in 100 grams of oil, grams | Content of Omega-6 fatty acid group in 100 grams of oil, grams |
|---|-----------------------|----------------------------------------------------------------|----------------------------------------------------------------|
| 1 | Sunflower             | 0,15-0,8                                                       | 60                                                             |
| 2 | Flax                  | 43-45                                                          | 15-25                                                          |
| 3 | Corn                  | 0,2-0,8                                                        | 50-57                                                          |
| 4 | Cotton                | 0,2                                                            | 40-50                                                          |

From the table, it can be concluded that the content of the Omega-3 and Omega-6 fatty acid groups in 100 grams of vegetable oils is different, which is explained by the variety of vegetable oils that allow for the enrichment of vegetable oil cupages with various substances.

The purpose of the work is to compose a balanced mixture of vegetable oils in a specific ratio with the introduction of traditional and non-traditional vegetable oils for the population of Uzbekistan. The authors compiled a cluster of vegetable oils based on the daily intake of mayonnaise and Omega-6 for an adult, which is 15-18 grams per day. The composition of the vegetable oil coupling is given in Table 2.

Table 2.

Cushing of vegetable oils

| № | Name of vegetable oil | Quantity of plants oils in a coupling, grams | Amount of Omega-3 fatty acid | Amount of Omega-6 fatty acid |
|---|-----------------------|----------------------------------------------|------------------------------|------------------------------|
|---|-----------------------|----------------------------------------------|------------------------------|------------------------------|

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|   |           |    | group in the<br>coupling, grams | group in the<br>coupling, grams |
|---|-----------|----|---------------------------------|---------------------------------|
| 1 | Sunflower | 20 | 0,16                            | 12                              |
| 2 | Flax      | 12 | 5,28                            | 2,4                             |
| 3 | Corn      | 5  | 0,05                            | 2,5                             |
| 4 | Cotton    | 2  | 0,016                           | 1                               |
|   | Total     | 39 | 5,506                           | 17,9                            |

From Table 2, it can be concluded that the content of vegetable oils and Omega-3 and Omega-6 fatty acid groups in the coupage is different, which is explained by the number of fatty acid groups, as well as their properties.

Plant oil baths are used to create products with a specified taste, aroma, and balanced fatty acid composition, used in cooking for frying, filling salads, as well as in dietetics as functional nutrition for disease prevention, cosmetology for hair care, and in industry, improving the biological properties of the final product [5].

The use of vegetable oil blends is relevant, as oils contain many biologically active substances that have a beneficial effect on human health as a whole, allowing the use of vegetable products even for the production of functional products.

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