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PRODUCTION OF FUNCTIONAL PRODUCTS THROUGH FRACTIONATION OF COTTONSEED AND SOYBEAN OIL BLENDS

As part of the localization program, an important task is the development of methods for obtaining, organizing industrial production, and applying edible fats using locally available raw materials. The production of specialty edible fats through the use of highly hardened hydrogenated, underspecified fats, palm oil, stearin, and animal fats is limited for several reasons. The main constraints include the labor intensity and high cost of modification processes, shortage of interesterification catalysts, and the use of imported palm oil and stearin.

In this regard, as a result of our previous research, a technology was developed to intensify the process of obtaining cottonseed palmitin and salad-grade cottonseed oil by fractionating a blend of "refined cottonseed oil – unrefined soybean oil," where the required proportion of unrefined soybean oil in the fractionated mixture averaged about 6%. Research results show that cottonseed palmitin obtained by fractionating such a blend becomes enriched with soybean oil phospholipids. This undoubtedly plays a positive role since phospholipids, as functional ingredients, have the following physiological effects on the body: enhancement of antioxidant system activity, normalization of liver and brain function, and reduction of cholesterol levels.

Our further studies demonstrated the effectiveness of fractionating a blend of "refined cottonseed oil – refined soybean oil – unrefined soybean oil" in a ratio of 50:44:6. The increase in the soybean oil content in the fractionated mixture to as much as 50% is due to the fact that soybean oil contains, on average, 9–10% linolenic acid (ω -3 polyunsaturated fatty acid). The physiological significance of this acid includes reducing the risk of cardiovascular and oncological diseases, improving immune system functions, lowering cholesterol levels, increasing resistance to infections and colds, and preventing intestinal disorders.

Thus, blending refined cottonseed oil with refined and unrefined soybean oils in the specified ratios makes it possible to intensify the fractionation process and produce functional fractionation products.

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