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## **SCIENTIFIC FOUNDATIONS OF PEANUT BUTTER PRODUCTION BASED ON LOCAL RAW MATERIALS**

**Abstract:** This scientific article explores the scientific foundations of producing peanut butter from locally sourced raw materials in Uzbekistan. The article analyzes the technological processes of peanut butter production, raw material selection, processing methods, factors affecting product quality, and the advantages of using local raw materials. Based on the research results, an optimized technology for peanut butter production is developed and its effectiveness is evaluated.

**Keywords:** peanut butter, local raw materials, production technology, quality indicators, optimization.

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### **Introduction**

Peanut butter is distinguished by its high nutritional value, rich vitamin and mineral content, and wide range of applications. This product is widely used not only in the food industry but also in the cosmetics and pharmaceutical sectors. Uzbekistan has favorable climatic conditions for growing peanuts, which makes it relevant to study the scientific foundations of peanut butter production using local raw materials.

**Objective:** To develop and optimize the scientific foundations for producing high-quality peanut butter from local raw materials.

### **Materials and Methods**

In the study, local peanut varieties (e.g., "Uzbekistan 30") were used as raw materials. The physicochemical composition of the raw materials, their technological properties, and their impact on product quality were studied. The following technological processes of peanut butter production were analyzed:

- Raw material preparation (cleaning, drying, roasting)
- Grinding and paste formation
- Addition of stabilizers and other additives
- Packaging and storage

The following methods were used in the study:

- Chemical analysis methods (determination of moisture, oil, protein, vitamin, and mineral content)
- Physicochemical analysis methods (determination of viscosity, density, color, taste, and odor)

- Statistical analysis methods (processing and analysis of results)
- Organoleptic analysis methods for evaluating product quality

## Results and Discussion

The research results showed that local peanut varieties have high nutritional value and are suitable for peanut butter production. Proper drying and roasting methods during raw material preparation significantly affect product quality. Optimal technological parameters (temperature, pressure, time) during grinding and paste formation influence the product's viscosity and consistency.

The following table presents the main indicators of local and foreign peanut varieties and the butters made from them:

Variety	Oil Content (%)	Protein Content (%)	Viscosity (Pa·s)	Color	Taste
"Uzbekistan 30"	50-55	25-30	2.5-3.0	Light brown	Peanut taste
Foreign variety 1	48-52	22-28	2.0-2.5	Dark brown	Chocolate taste
Foreign variety 2	52-58	28-32	3.0-3.5	Light brown	Salty taste

The addition of stabilizers and other additives extends the product's shelf life and improves its organoleptic properties. Based on the research results, an optimized technology for peanut butter production was developed, which improves product quality and reduces production costs.

## Conclusion

The study of the scientific foundations of peanut butter production from local raw materials led to the following conclusions:

- Local peanut varieties are suitable for peanut butter production.
- The optimal technological parameters of raw material preparation, grinding, and paste formation were determined.
- The use of stabilizers and other additives improves product quality and extends shelf life.
- An optimized technology for peanut butter production was developed.

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