

Date: 3rd September-2026

STUDY ON THE EFFECT OF MIXTURES OF VEGETABLE SEED OILS IN VARIOUS PROPORTIONS ON CREAM CHARACTERISTICS

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Abstract: This article presents the results of research on the effective utilization of the specific properties of oils derived from melon-family crop seeds—specifically by using them in blended form—to enhance performance. It analyzes the impact of various blend ratios on the characteristics of a cream and details the properties of the resulting cream formulations.

Keywords: melon-family crop seeds; pumpkin, melon, and watermelon seeds and oils; ratios; cream quality indicators; moisturizing effect; skin absorption; elasticity; viscosity.

Improving the production technologies for cosmetic creams is considered one of the most important scientific and practical areas within the cosmetics industry. Modern consumers expect products to offer not only good decorative qualities but also high safety, ease of application, a long shelf life, and positive physiological effects on the skin. Consequently, extensive scientific research has been conducted over the past thirty to forty years to advance cosmetic emulsion technology. The primary objectives of this research have been to enhance product quality, reduce production costs, develop energy-efficient technologies, and improve the functional properties of the products. Scientific literature indicates that while earlier cosmetic creams were primarily produced using mechanical mixing methods, modern production now widely employs high-efficiency vacuum homogenization, microemulsion technology, nanodispersion, and automated control systems [1].

These technologies not only significantly enhance the physical stability of the product but also improve its appearance and consumer-facing properties. Consequently, research aimed at refining cosmetic manufacturing technologies is regarded as a priority scientific area across all leading centers of the cosmetics industry [2].

Experiments were conducted to utilize the unique properties of oils derived from melon and gourd seeds effectively and to enhance performance by using blends of these oils. The results obtained are presented in Table 1.

Table 1

Effect of mixtures of melon and gourd seed oils in various proportions on cream characteristics

Sample	Pumpkin:Melon:Watermelon	skin absorption	moisturizing effect, %	increase in elasticity, %	oxidative stability, %
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		time, min			
N1	1:1:1	8,33	30,53	15,13	93,67
N2	1:1:2	8,28	31,05	15,25	93,45
N3	1:2:1	8,33	30,08	15,10	93,82
N4	2:1:1	8,40	29,95	15,05	93,95
N5	1:2:2	8,26	30,96	15,24	93,44
N6	2:1:2	8,32	30,70	15,20	93,56
N7	2:2:1	8,38	30,20	15,12	93,78
N8	1:3:1	8,32	29,82	15,06	93,94
N9	3:1:1	8,45	29,56	14,98	94,12
N10	1:1:3	8,22	31,45	15,35	93,20
N11	2:1:3	8,26	31,10	15,28	93,32
N12	3:1:2	8,35	30,30	15,14	93,75

The data in Table 1 indicate that the oil composition influences the properties of the cream. Creams formulated with a pumpkin, melon, and watermelon oil blend in a 1:1:3 ratio exhibited the highest moisturizing performance, while those with a 2:1:1 ratio demonstrated the best oxidative stability. Blends in 1:1:1 and 1:1:2 ratios yielded creams with improved overall and average performance characteristics.

A comparative analysis of the experimental results led to the conclusion that the optimal ratio for the pumpkin, melon, and watermelon oil blend is 1:1:2. The properties of the cream formulated using this oil blend ratio are presented in Table 2.

Table 2

Characteristics of a cream formulated using a blend of pumpkin, melon, and watermelon oils in a 1:1:2 ratio.

Indicator	Values
Density, g/cm ³	0,961
Viscosity, Pa·s	34,2
Emulsion stability, %	98,73
Spreadability, cm ² /g	28,9
Skin absorption time, min	8,28
Moisturizing effect, %	31,05
Elasticity improvement, %	15,25
Organoleptic evaluation (5-point scale)	4,6
Thermal stability, °C	47
Oxidative stability	93,45

The data in Table 2 show that the cream formulated with an optimal blend of melon and gourd seed oils meets the established standard values for all parameters.

LIST OF REFERENCES:

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Date: 3rd September-2026

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