

F.16. NUTRITIONAL AND MICRONUTRIENT PROFILING OF A FUNCTIONAL COMPOSITION BASED ON PUMPKIN AND SEA BUCKTHORN POWDERS

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Abstract. This analysis evaluates the nutritional value and micronutrient profile of a functional composition consisting of 1.5 g pumpkin (*Cucurbita* spp.) powder, 1 g sea buckthorn (*Hippophae rhamnoides*) powder, and 1 g of 0.6% pectin gel, with extrapolation to 100 g of product for standardization purposes. The objective of the study is to characterize the contribution of each ingredient to the intake of macronutrients, vitamins, and minerals, as well as to highlight the role of bioactive compounds, particularly provitamin A carotenoids. The results indicate that the product has a low energy value - 8.26 kcal per 3.5 g, being characterized by a low content of proteins - 0.22 g, lipids - 0.245 g and carbohydrates - 1.73 g. The pectin gel contributes insignificantly to caloric intake but provides a functional contribution of dietary fiber, potentially supporting beneficial effects on digestion and lipid metabolism. The micronutrient analysis highlights a profile rich in antioxidant vitamins. Vitamin C is predominant, reaching approximately 123 mg/100 g, due to the high content in sea buckthorn, which is known for its antioxidant and immunostimulatory properties. Vitamin A is present exclusively in the form of carotenoids, with an estimated total of 6.3 mg/100 g. The distribution of fractions indicates the predominance of β -carotene around 75%, followed by α -carotene and β -cryptoxanthin ~10% each. Conversion into retinol equivalents reveals an intake of approximately 446 μ g RAE/100 g, suggesting a significant contribution to the daily requirement of vitamin A. Vitamin E is present in a moderate amount approximately 1.4 mg/100 g, further contributing to the antioxidant capacity of the product. Regarding minerals, potassium is the dominant element around 360 mg/100 g, playing an essential role in regulating electrolyte balance and muscle function. Calcium (~31 mg/100 g) and iron (~1.3 mg/100 g) are present in moderate amounts, contributing to bone health and hematopoietic processes. Other identified minerals include magnesium (25–35 mg), phosphorus (50–70 mg), zinc (0.5–0.8 mg), sodium (5–15 mg), and copper (0.2–0.4 mg), which support various metabolic and enzymatic functions. The nutritional profile of the composition is dominated by bioactive compounds of plant origin, particularly carotenoids and vitamin C, suggesting a high antioxidant potential. Although the caloric and macronutrient intake is low, the micronutrient density is relevant, especially in the context of using the product as a dietary supplement or functional ingredient. In conclusion, the combination of pumpkin powder and sea

buckthorn powder, stabilized with pectin gel, results in a product with low energy value but rich in antioxidant vitamins and essential minerals. The predominance of provitamin A carotenoids and high vitamin C content confers a beneficial potential for supporting immunity and oxidative protection. This type of formulation can be utilized in the development of functional foods or health-oriented dietary supplements.

Keywords: provitamin A carotenoids, pumpkin (*Cucurbita* spp.), sea buckthorn (*Hippophae rhamnoides*), functional composition, nutritional profile.

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