Abstract

The creation of wholesome snack products from sustainable protein sources has been prompted by the growing demand for plant-based and high-protein diets. The purpose of this study was to create and describe high-protein snack bars made with various proportions of lupine bean (Lupinus albus), black bean (Phaseolus vulgaris), and sacha inchi (Plukenetia volubilis). Three formulations with different portions of the beans used, and their texture profile, color features, and proximate composition (protein, fat, fiber, moisture, and carbohydrate) were examined. The formulation with 70% sacha inchi had the highest protein (20.08%), fat (1.67%), and moisture (36.10%) values, showing a significant difference compared to 2 formulations, according to the results. While the formulation with 70% black bean had the largest carbohydrate content (51.64%) and the toughest, chewiest texture, the formulation with 70% lupine bean had the highest fiber level (8.09%). Color analysis showed significant differences ($p < 0.05$) among formulations, with variations in L, a, and b* values influenced by the proportions of sacha inchi, black bean, and lupine bean, reflecting the effects of natural pigments and non-enzymatic browning reactions during baking. For the majority of nutritional and physicochemical criteria, there were significant variations ($p < 0.05$) between formulations. These results suggest that ingredient ratios have a major impact on snack bar quality, with the 70% sacha inchi formulation exhibiting the most promise as a high-protein plant-based snack bar.

Keywords: *black bean, color analysis, lupine bean, plant-based snack bar, proximate analysis, sacha inchi, texture profile analysis*