

Abstract

Crickets present an affordable, high-protein alternative with a balanced nutritional profile. However, their distinct earthy flavor and consumers' reluctance toward insect-based foods may limit their application in food products. One potential food vehicle is chocolate ice cream, which is widely favored and may help mask the flavor of crickets. Therefore, this study evaluated the effects of cricket powder incorporation on the physicochemical properties and proximate composition of chocolate ice cream. Four ice cream formulations were developed (control, 9%, 12%, and 15% cricket powder addition), and the following analyses were performed: color, overrun, melting rate, viscosity, texture, total solids content, ash content, fat content, and protein content. Increasing cricket powder concentration significantly decreased lightness (37.327 ± 1.002 to 31.353 ± 0.545) and overrun ($26.077 \pm 2.225\%$ to $16.906 \pm 1.569\%$), while increasing viscosity (3999.444 ± 121.341 to 6651.556 ± 955.167 cP), hardness (930.778 ± 14.151 to 2069.778 ± 94.318 g), and total solids ($43.574 \pm 0.458\%$ to $46.648 \pm 0.138\%$). Although melting rate, ash, fat, and protein contents were not significantly affected ($p > 0.05$), ash and fat showed increasing trends, whereas the measured protein content declined (58.752 ± 0.701 to 45.841 ± 18.973 mg/mL). Overall, the incorporation of cricket powder into ice cream showed altered physicochemical properties and proximate composition. For protein analysis, alternative methods like BCA and Lowry are recommended to improve analytical accuracy.

Keywords: Alternative Protein, Crickets, Edible Insects, High-protein, Ice Cream