

Title Effect of Temperature, Alkali Concentration, Mixing Time and Meal/Solvent Ratio on the Extraction of Watermelon Seed Proteins—a Response Surface Approach

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Abstract

Watermelon seeds are a byproduct of juice manufacture and contain good-quality extractable proteins. The effect of temperature, alkali concentration, mixing time and solvent/meal ratio was studied on the extraction of watermelon (*Citrullus lanatus* cv Mateera) seed protein. A central composite design was used with four variables: temperature (40, 45, 50, 55 and 60 °C); alkali concentration (0.3, 0.6, 0.9, 1.2, and 1.5% w/v); extraction time (5, 10, 15, 20 and 25 min); and solvent/meal ratio (30:1, 40:1, 50:1, 60:1 and 70:1). The experimental values of protein yield ranged between 75.49% and 86.08%. The second-order model obtained for protein yield revealed coefficient of determination of 0.846. Protein yield was primarily affected by alkali concentration and solvent/meal ratio. Maximum yield was obtained when alkali concentration, solvent/meal ratio, temperature and extraction time were 1.2% w/v, 70:1, 40 °C and 15 min, respectively. These results help in designing the process of optimal protein extraction from watermelon seeds.