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Abstract	:	Background Kenaf seeds are a rich source of protein; however, finding the best extraction method is crucial to obtaining high-quality protein from these underutilized seeds. This research devised an optimized extraction process for best recovery of kenaf seeds protein using response surface methodology. The key parameters affecting the yield and protein content were optimized, including extraction pH (2–11), seed:water ratio (5:1–50:1), temperature (30–90 °C), and duration (20–360 min). The physicochemical and techno-functional properties of kenaf seed protein isolates (KSPIs) were examined. A maximum protein yield of 12.05 g/100 g with purity level 91.94 g/100 g was obtained using an optimized extraction with pH 11.0, seed:water ratio 50:1, 360 min duration, and temperature 50 °C. The oil and water retention capacities of KSPI were 1.14 mL g⁻¹ and 1.37 mL g⁻¹ respectively. After 30 min at pH 7, KSPIs demonstrated remarkable emulsion capacity (83.12%) and stability (75.63%), along with high foaming capacity (106%) and stability (18.3%). As per high-performance liquid chromatography analysis, arginine, glutamic acid, leucine, phenylalanine, and lysine were the most abundant amino acids detected in KPSIs. The KSPIs' globular protein structure was successfully verified using analytical approaches, including Fourier transform infrared..see more