

# Functional Properties, Physicochemical Characteristics and *In-Vitro* Digestion of Coconut Poonac Protein Isolate

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The recent trend has been set toward the consumption of plant-based proteins. Coconut poonac is a low-cost by-product of coconut oil extraction. Therefore, an effort is needed to identify the potential applications of poonac as a source of plant protein. Religious concerns, an increasing number of vegetarians in society, and environmental impacts are the reasons for the further utilization of plant-based protein sources in many food applications. This study evaluated the functional properties and physicochemical characteristics of coconut poonac protein isolate (CPPI) and the results were compared with soy protein isolate (SPI). Soybeans contained about 33.94% proteins whereas coconut poonac contained 17.73% proteins. Protein content in CPPI and SPI were found to be 68.64% and 79.58%, respectively. The isoelectric point of CPPI and SPI was confirmed by the observation of minimum solubility at pH 4. In comparison to SPI, CPPI exhibited significantly higher water absorption capacity (4.09 g/g), oil absorption capacity (5.56 g/g), emulsifying activity (73.33%), emulsion stability (46.67%), and foaming capacity (71.33%). SPI and CPPI both had 14% least gelation capacity. *In-vitro* digestion of SPI was significantly higher ( $p < 0.05$ ) than CPPI. Veggie meatballs were produced with baby jackfruits and the incorporation of 0%, 2%, 4%, and 8% CPPI. Protein content for meatballs containing 0%, 2%, 4%, and 8% CPPI was 1.33%, 2.72%, 4.15%, and 6.82%, respectively. All meatball groups exhibited pH values between 5.64-5.06 and water activities between 0.61-0.81. According to the results, CPPI has good functional properties which can be explored as a source of plant-based alternative protein for food applications. Sensory evaluation revealed that meatballs with 4% CPPI were overall acceptable. This confirms that CPPI has great potential in food applications, especially in the development of meat alternatives.

Keywords: Food Applications, Plant-Based Protein, Solubility