

**DEVELOPMENT OF PLANT-BASED PROTEIN TEA
PREMIX USING TEA CREAM AND PEA (*Pisum sativum*)
AND RICE (*Oryza sativa*) PROTEIN ISOLATES**

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ABSTRACT

Tea is well known for its refreshing and health promoting properties. Tea cream is the precipitate formed as tea cools. All the important tea constituents are concentrated in tea cream. Further, it is produced as a byproduct during cold-water-soluble instant tea manufacture. Adequate dietary intake of protein is important for growth, wellbeing and as an energy source. Generally, vegetarian diets are not wholesome in terms of quantity and quality of protein supplied. Therefore, there is a potential to deliver high quality plant-based protein in concentrated form via tea which is renowned as a healthy beverage. This study was carried out to develop a plant-based protein tea premix. Tea cream was prepared using the discarded fraction during tea manufacture which is known as 'refuse tea'. Recipes of protein tea premix were prepared by incorporating different levels of Pea (*Pisum sativum*) protein isolate (38%, 45%, 49%, 53% and 60%) and Rice (*Oryza sativa*) protein isolate (60%, 53%, 49%, 45% and 38%) with a constant level of tea cream (2%). Sensory properties; colour, aroma, taste, mouth feel, appearance and overall acceptability of the samples were evaluated using 9 points Hedonic scale by 30 untrained panelists and the best recipe was selected for further analysis. Protein, moisture, ash, crude fat and crude fiber contents of the product were determined using official AOAC methods. Total phenolic content was determined as Gallic Acid Equivalent (GAE) by Folin Ciocalteu colorimetric method. Total antioxidant capacity was determined by assessing the DPPH free radical scavenging activity. The selected protein tea premix contained $82.58 \pm 0.40\%$ protein $8.00 \pm 0.34\%$ moisture and $3.06 \pm 0.08\%$ ash whereas crude fiber and crude fat were not detected in the sample. Total polyphenol content of the product was 16.64 ± 0.57 mg GAE g^{-1} and its inhibition concentration (IC₅₀) was found to be 137.10 ± 0.55 μg ml^{-1} . Therefore, the developed plant-based protein tea premix with its high protein content and appreciable levels of polyphenol and antioxidant activities would be a healthier and an appealing protein source.

Key words: Tea cream; Protein isolate; Pea; Rice; Proximate composition.