DEVELOPMENT OF WHEY PROTEIN INCORPORATED CEREAL FORMULATION

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This study was aimed to develop whey powder (DWP) from the filtrate of paneer cheese, (drying the whey liquid at 55 °C for 10 hr.) and to prepare whey added cereal formulation. The DWP was compared with commercial whey powder (CWP) for proximate compositions. *Oryza sativa* L., *Vigna radiata* L., *Cicer arietinum* L., and *Zea mays* L. were mixed with 1:1:1:1 ratio for developing the cereal mix. DWP was incorporated into the cereal formula with different ratios 0% (T_1), 45% (T_2), 57% (T_3), 65% (T_4), and 70% (T_5), and T_4 was selected as the best ratio through sensory evaluation. Physicochemical [pH, titratable acidity (TA)] and microbiological quality [Yeast and mould count (YM), total plate count (TPC)] of DWP, and T_4 were analysed for 21 days at 27 °C. The experiment was conducted in a Completely Randomized Design with three replicates. The proximate analysis showed that there is no significant difference ($p>0.05$) in ash and crude fibre between DWP (14.1± 0.58%, and 0.4 ± 0.74%, respectively) and CWP (14± 0.47% and 0.4± 0.85%, respectively), where moisture, fat and carbohydrate in DWP (4.7± 0.56%, 2.6 ± 0.64%, and 60.2 ± 0.85%, respectively) was significantly ($p<0.05$) high compared to that of the CWP (4.3 ± 0.23%, 2 ± 0.61%, and 34.3 ± 0.78%, respectively). The moisture, protein, fat, fibre, ash, and carbohydrate content of T_4 were 6.17 ± 0.31%, 22.1 ± 0.16%, 3.50 ± 0.03% 5.1 ± 0.01%, 8.76 ± 0.13%, and 54.31 ± 0.05%, respectively. The pH of DWP and T_4 varied from 4.97 to 5.0, and 6.34 to 6.2, respectively, whereas TA varied from 0.13 to 0.28 and 0.15 to 0.3, respectively during storage, which are in the acceptable pH and TA for whey (<5.1 and 0.12 – 0.35%, respectively) and cereal mix is (<6.6 and <0.35%, respectively). DWP and T_4 showed YM count of 8×10^1 $CFUg^{-1}$ and 7×10^1 $CFUg^{-1}$, respectively and TPC of 2.2×10^4 $CFUg^{-1}$ and 1.6×10^4 $CFUg^{-1}$, respectively (acceptable range for YM ≤100 $CFUg^{-1}$ and TPC ≤3×10^4 $CFUg^{-1}$). The DWP and T_4 show desirable physicochemical, microbiological, and sensory properties within 21 days.

Keywords: Cereal formulation, Paneer, Protein content, Whey powder