

Development of dehydrated vegetable and cereal based nutritious soup mixture

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The vegetable was dehydrated at 60 °C (mushroom and tomato, 6 h, & B. onion, 5 h) and at 40 °C (gotukola & curry leaves, 8 h). Flour was prepared by roasted soybean and mungbeans (20 min), red rice (presoaked for 4 h, dried at 60 °C for 1 h), pumpkin (dehydrated at 60 °C for 6 h) followed by grinding and sieving (Sieve no. 100 ASTM). Preliminary studies were conducted to select the best combination of vegetable and starch sources. Salt, cornflour, spices (pepper, garlic) were constantly added with different levels of vegetable and starch sources. Sensory evaluation was conducted (5 points Hedonic scale (1-extremely like, 5-extremely dislike). on color, aroma, taste, consistency and overall acceptability of the soup mixture with 30 untrained panelists. The data was analyzed by Freedman nonparametric analysis (Minitab software).

The proximate analysis was conducted for the best soup formula to determine moisture, crude protein, crude fibre, crude fat, total ash and starch. Physico-chemical parameters such as pH, brix, titratable acidity and color of the reconstitute soup mixture. The storability study of the developed soup mixture in triple laminated package (PE/Al/PE) was conducted in terms of water activity, moisture content and color changes at two weeks interval for two months. Microbiological tests on the soup mixture were conducted.

The results revealed the soup mixture containing 40% vegetable (mushroom 20 %, B. onion 10%, tomato 7%, gotukola 3%), 40% starch (red rice 20%, soybean 10%, green gram 6%, pumpkin 4%) and 20% other ingredients (salt, corn flour, pepper and garlic) was the best (Rank sum different test, 0.05%). This mixture was contained a considerable amount of crude protein (39.4%), crude fat (4.8%), crude fiber (14.04%), total ash (11.5%) and starch (25.1%) respectively. During the storage study moisture content, color and water activity of the dried soup mixture were not significantly difference ($p=0.05$). The total colony forming counts (1.7×10^3 cfu/g) and yeasts & mould (1.5×10^2 cfu/g) were below the upper tolerance level (10^5 cfu/g) for dried soup mixture after 2 months of storage in triple laminated package (PE/Al/PE).