Title of the Thesis: Studies on the development of rice based vegetable supplemented functional instant soup mix

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Degree to be awarded: Doctor of Philosophy
Total Pages in Thesis: 231
Name of University: Sant Longowal Institute of Engineering and Technology

ABSTRACT
The rice based vegetable supplemented functional instant soup mix was formulated, which may provide a variety to soup in diet and also provide enhanced nutrition. The characteristic of twenty two paddy cultivars were studied for physical and optical properties to identify the long grain paddy varieties using principal component analysis (PCA). The identified long grain paddy varieties (Muchhal, Pusa 1121, Shabnam, Sugandha and Usha) were subjected for shelling and milling to identify the most milling susceptible paddy variety. The obtained rice broken of selected Pusa 1121 has been used to compare the flours prepared using different grinding methods (dry grinding, wet grinding and semidry grinding). The obtained rice broken of selected Pusa 1121 has been used to compare the flours prepared using different grinding methods (dry grinding, wet grinding and semidry grinding). The obtained rice flour of Pusa 1121 variety has been used to compare the flours prepared using different grinding methods (dry grinding, wet grinding and semidry grinding). The fine fraction of untreated moringa oleifera leaf powder fractionated using 150 BSS sieve was comparable and usable form of dehydrated powder obtained at a dehydration temperature of 60°C. Fat is one of the important components of soup. None of the available fat or oil fulfils the recommendations of American Heart Association (AHA) regarding the saturated fatty acid (SFA), mono unsaturated fatty acid (MUFA) and poly unsaturated fatty acid (PUFA) compositions. Blending of oils has been found to alter the fatty acid compositions. Linear programming technique with the cost minimization as an objective function was applied to achieve the recommendations of fatty acid composition as SFA:MUFA:PUFA::1:1:1. This developed cost effective oil blend was thus used as one of the soup ingredient. The level of ingredients was optimized using statistical optimization technique (Response Surface Methodology, RSM) for the development of instant soup mix. Optimum conditions were found as Rice flour, Moringa leaf powder and Blended oil in the ratio of 5.537:0.890:0.526. The optimized dry formulation was subjected for the engineering characterization, advanced analytical characteristics, cost analysis and behavior of prepared soup as applicable for rice based vegetable supplemented functional instant soup mix. The mean sensory scores have reflected that the sensory acceptable soup could be obtained. The sensory scores of the product were found to be significantly higher than the control during storage. The product remained acceptable till the storage period of six months.

Keywords: Soup, rice flour, moringa, carrot, peas, characterization

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