

Value Addition and Quality Evaluation of Pasta Formulated Using Chickpea (*Cicer Arietinum*) Flour

Rimaz A.M.M.^{1*}, Sajiwanie J.W.A.², and Lakshani R.S.K.³

¹ Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka

² Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka

³ Diamon Best Foods (Pvt) Ltd., Peliyagoda, Sri Lanka

*rimaz0514@gmail.com

Consumer awareness and commercial demand for healthy foods is increasing nowadays. And, also there is a good potential for pasta with higher nutritional value in Sri Lanka. The aim of this study was to formulate nutritionally improved pasta compared to the regular durum wheat pasta (*Triticum durum*) using chickpea flour (*Cicer arietinum*). The product was formulated by changing the percentages of chickpea and durum wheat flour to obtain pasta with the highest chickpea proportion along with optimum organoleptic and cooking quality. Evaluation of powder characteristics for both flours showed that there were significant differences ($P < 0.05$), and chickpea flour had lower bulk ($365.88 \pm 3.89 \text{ kgm}^{-3}$) and tapped density ($652.33 \pm 12.41 \text{ kgm}^{-3}$). Nine-point hedonic scale test and cooking quality test identified the most preferred formulation of pasta and it was 95% chickpea flour and 5% corn flour added pasta. The cooking quality test revealed that formulated chickpea pasta had a lower optimum cooking time ($8.83 \pm 0.3 \text{ min}$) with a significant difference ($p < 0.05$), while higher values obtained for cooking loss ($7.95 \pm 0.59\%$), swelling index (2.86 ± 0.08), increase in volume ($272.77 \pm 0.47\%$) and a significant difference was observed in each of these qualities ($p < 0.05$). The proximate result of chickpea pasta was moisture ($9.43 \pm 0.06\%$), crude fat ($8.35 \pm 0.27\%$), crude protein ($21.73 \pm 1.57\%$), ash ($1.52 \pm 0.01\%$) and carbohydrate ($49.36 \pm 1.42\%$). Moreover, these values (except carbohydrate) are higher than durum wheat pasta, and it showed a significant difference ($p < 0.05$). Crude protein and crude fiber content in chickpea pasta are 1.5 and 3 times higher compared to durum wheat pasta, respectively. Texture profile analysis results showed that there were no significant differences ($p > 0.05$) in hardness, cohesiveness, springiness, gumminess, and chewiness. Greater colour change (ΔE^*) was observed in chickpea pasta (9.09) due to cooking than in durum wheat pasta (3.03). Storage study revealed that no yeast and mould count and lower total plate count (less than the detection limit) were observed during the 6-week period. And changes in moisture content were also in acceptable level during this study period. Accordingly, the final product has high nutritional significance than the regular durum wheat pasta.

Keywords: Chickpea pasta, Cohesiveness, Durum wheat pasta, Springiness