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Development of a flake mix using legumes with high total dietary fiber, resistant starch and low glycemic index

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Consumption of dietary fiber rich food has shown many health benefits against a range of disorders including obesity, type 2 diabetes mellitus and colon cancer. Dietary fiber is composed of soluble dietary fiber (SDF) and insoluble dietary fiber (IDF). Legumes are rich source of total dietary fiber (TDF) and resistant starch (RS). Hence, legume starch has low predicted glycemic index (pGI). This study was carried out to develop dietary fiber rich multi legume flake mix with low predicted glycemic index from selected locally available legume varieties. Accordingly, 11 legume varieties – mung bean (MI 5, MI 6), Cowpea (Waruni, MICP1, Bombay, Dhawala ANKCP1), soybean (PB1, MISB1) and horse gram (ANK black, ANK brown) – were analyzed for TDF, RS and pGI content.

The multi-legume flake mix was prepared in 3 different formulae (F1, F2, and F3) by using sorghum (50%) as the base. Different legume proportions of soybean, horse gram, cowpea, and mung bean in those formulae were F1 - 5%, 20%, 15%, 10%, F2 - 10%, 5%, 15%, 20%, and F3 - 5%, 15%, 20%, 10%, respectively. Sensory evaluation was carried out with 3 flavors; coconut milk + spices, coconut milk + sugar, milk powder + sugar for F1 formula. The taste, mouth feel and overall acceptability of flake mix with the coconut milk + spicy flavor was identified as the significantly ($p < 0.05$) superior. Subsequently, those three formulae were prepared in coconut milk + spicy flavor and those were analyzed for TDF, RS and pGI value. Among 3 formulae, F1 has the highest TDF %13.84(SD 0.08), highest RS %4.07(SD 4.07) and the lowest pGI 33.52(SD 0.11). Hence, the F1 formulation can be considered as the best formula for the preparation of a dietary fiber rich multi-legume flake mix.

Keywords: Predicted Glycemic Index, resistant starch, total dietary fiber

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