

Nutritional and Functional Properties of Defatted Desiccated Coconut Flour of Different Coconut Varieties

H.P.D.T.H. Pathirana^{1*}, W.M.K. Lakdushighe¹, L.L.W.C. Yalegama¹,
C.A.T.D. Chandrapeli¹, K.P. Waidyarathne² and J.M.N. Marikkar³

¹Coconut Processing Research Division ²Plant Physiology Research Division Coconut Research Institute, Lunuwila 61150, Sri Lanka

³National Institute of Fundamental Studies, Hanthana Road, Kandy 20000, Sri Lanka
*dilthihewa@gmail.com

Defatted desiccated coconut flour (DCF) is a by-product of dry processing of virgin coconut oil (VCO). Processing of VCO is limited to commercially available coconut varieties but the varietal effect is not considered. Therefore, aim of this research was to evaluate the nutritional and functional properties of DCF extracted from four types of coconut varieties, namely Tall×Tall (TT), Gon Thambili (GT), Ran Thambili (RT) and San Ramon (SR). Whole wheat flour (WWF) was used as the control. Fifty fully matured coconuts from each variety were collected from Bandirippuwa Estate of Coconut Research Institute, Lunuwila, Sri Lanka to produce VCO and by-product of residue was collected and converted into flour. The functional and nutritional properties of each flour were evaluated using standard methods. Experiment was arranged as a complete randomized design (CRD) with three replicates and each parameter was analyzed using one-way ANOVA. Analysis confirmed that there was no significant ($p>0.05$) varietal effect for the amount recovery of DCF ($15.33 \pm 0.41\%$). About 23.16% of DCF has less than 250 μm size particles and very low moisture contents ranging from 2 - 4% without showing significant difference between varieties. The variety GT showed significantly higher swelling capacity (49.00 ± 0.00 ml) and wettability (27.46 ± 0.00 s) while showing significantly lower bulk density (0.48 ± 0.00 g/ml) and tapped density (0.56 ± 0.00 g/ml). GT and TT varietal flour has lower hygroscopicity (11.65%) while retaining lower fat ($13.74 \pm 1.84\%$) content in GT flour. Significantly high protein ($22.07 \pm 0.63\%$) and ash ($6.81 \pm 0.67\%$) could be observed in both SR and TT. Four types of DCF can be used as a fiber supplement (between $16.72 \pm 0.94\%$ to $18.70 \pm 0.17\%$) whereas WWF is rich in carbohydrate ($69.84 \pm 0.30\%$). GT flour has higher functional properties while SR and TT showed higher protein and fiber. Therefore, DCF can be used as a nutritive and functional supplement.

Keywords: Defatted desiccated coconut flour, Functional, Proximate, Variety