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Borassus aethiopum Mart Mature Fruits Macro-Composition, Drying Temperature Effect on Its Pulp Protein, Fat, Sugars, Metabolizable Energy, and Fatty Acids Profile

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Abstract : The work aimed to study Borassus aethiopum Mart (B.a) dried pulp nutritional value for its incorporation in human and poultry diets. Firstly, the mature fruit macro-composition was assessed. Secondly, the pulp was dried at 40, 50, 60, 70, and 80°C. Thereafter, the analysis was performed for fat, protein, total sugars, Ca, P, Mg, and fatty acid profile monitoring. As a result, the fruits weighed 1,591.35, delivered 516.73, and 677.82 grams of pulp and seeds, respectively. Mainly, increasing heat adversely affected the outputs. Consequently, the fat results were 14.12, 12.97, 8.93, 8.89^{c}, and 5.56%; protein contents were 11.64, 10.15, 8.97, 8.84, and 8.42%; total sugar deliveries were 6.28, 6.05, 5.26, 5.02, and 4.76% ($P < 0.01$). Thereafter, the metabolizable energies were 3,785.22; 3,834.28; 3,616.62; 3,667.03; and 3,608.33 kcal/kg (DM). Additionally, Calcium (Ca) contents were 0.51, 0.55, 0.69, 0.77, and 0.81%, while phosphorus (P) mean was 0.17%, and the differences were not significant ($P < 0.01$). So, the Ca/P ratios were 2.79, 3.04, 4.10, 4.71, and 4.95. Finally, fatty acids (FA) assessments revealed 22.33 saturated (SFA), 77.67 unsaturated (UFA), within which 67.59% were monounsaturated (MUFA). Interestingly, the rising heat depressed n-6/n-3 ratios that were 1.1, 1.1, 0.45 and 0.38, respectively at 40, 50, 70 and 80°C. In short, drying did not only enhance the product shelf life but it also improved the nutritional value. Thus, B.a mature fruit pulps dried at 70°C are good functional foods, with more than 66% MUFA, and energy source for human and poultry nutrition.

Keywords : Borassus aethiopum Mart, fatty acids, metabolizable energy, minerals, protein
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