

Evaluation of Powder Properties of Hot-air Dried Bael Fruit (*Aegle marmelos*) Powder

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Bael (*Aegle marmelos*) fruit is an important tropical fruit that has various nutritional and therapeutic properties. Although bael fruits have these valuable properties, it is considered as an underutilized fruit species in Sri Lanka and therefore postharvest losses are high. Drying is a suitable alternative for the postharvest management of bael fruit. Therefore, the aim of the present study is to obtain three different types of bael fruit powders by drying pulp of matured fruits at 60⁰C, 70⁰C and 80⁰C temperatures. After obtaining dried powders, moisture content, pH, rehydration properties, colour analysis, density, flowability characteristics were determined. Sorption isotherm was developed by obtaining data at different relative humidity conditions. According to the results, all fruit powder samples had desirable moisture contents (<10%). Lowest pH value was obtained in powder dried at 70⁰C (4.84±0.04). According to the rehydration properties, better solubility characteristics were observed in sample dried at 60⁰C (86.08% ± 0.99) and 70⁰C (83.76% ± 0.11). Considering all the chroma analysis values, most desirable characteristics were shown in sample dried at 60⁰C ($L^* = 58.32 \pm 0.32$, $a^* = 13.03 \pm 0.30$, $b^* = 25.45 \pm 0.10$) with a pleasant aroma. Highest bulk density (520.96 ± 0.95 kg m⁻³) was observed in sample dried at 60⁰C and it is desirable for low cost packaging and transportation. Sample dried at 60⁰C showed very good flowability and cohesiveness properties according to the Carr index (12.5) and Hausner ratio (1.14). Bael fruit powder showed type III isotherm which is a characteristic for foods with high sugar contents. Considering all the evaluated characteristics, it can be concluded that hot air drying is a suitable method for preserving bael fruit and effective temperature for drying is 60⁰C.

Keywords: Bael Fruit, Hot Air Drying, Powder Properties, Temperature