Public Abstract

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Title:Processing and Properties of Amaranth Cake

The objective of this study was to investigate effect of processing conditions on the properties of puffed amaranth cakes. Amaranth grain was extruded and cut into 1-2 mm long pellets by an APV Baker twin-screw extruder with a 25:1 L/D. Pellets were dried in a hot-air oven at 65.5oC until 10% moisture (wb), cooled at room temperature, then was stored at 5oC. Pellets were mixed with parboiled rice and water to the desirable moisture contents and tumbled in a liquid-solid blender for 1 h. The mixture was tempered for 12 h before puffing. A 4 x 3 x 3 x 2 factorial experiment design with two replications was used, amaranth content (100, 90, 80, and 70%), puffing temperature (215.6, 221.1, and 226.7oC), puffing time (4, 5, and 6 s), and moisture content (14 and 15.5%). The mixture was puffed using a Light Energy Rice Cake Machine. The color of amaranth cakes was more red and yellow when puffing temperature and time was increased, but lightness was decreased. Specific volume of amaranth cake was raised with the increased puffing temperature and time and the decreased amaranth content. The overall percent weight losses were higher with the higher amaranth content but lower with the higher puffing temperature and time. At 100% amaranth content, the hardness was decreased when the puffing temperature and time were higher. In contrast, when amaranth content and moisture content were lower, the hardness increased. The majority of panelists preferred 100% amaranth cake puffed at 221.1oC for 5 s.