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Quality and Antioxidant Properties of Muffin Added with Various Amount of 'Fuji' Apple Pomace Powder

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The apple pomace was created as by-product in the apple juice manufacturing, and was mostly thrown out. Therefore, development of application method in food industry for abandoned apple pomace is needed. In this study, we prepared muffin with various amount of 'Fuji' apple pomace powder, and investigated the quality, antioxidant and sensory properties of muffin to conform the possibility for application in food industry. Muffin was prepared with sugar, butter, eggs, milk, wheat flour, and various amounts (5, 10 and 15%(w/w)) of 'Fuji' apple pomace powder. And then the quality and antioxidant properties of muffin containing various amount of apple pomace powder were evaluated. The height, pH, volume, specific volume, and baking loss rate, texture and chromaticity as quality properties, and the total polyphenol content, ABTS radical scavenging activity and DPPH radical scavenging activity as antioxidant properties were investigated. The taste, color, flavor, chewiness and overall preference as sensory properties were evaluated by 9 point hedonic scale. First, in the quality properties, the height, pH, volume, specific volume, and baking loss rate of muffin were decreased significantly with an increasing amount of apple pomace powder ($p < 0.05$). Regarding the texture and chromaticity of muffin prepared with increasing amount of 'Fuji' apple pomace powder, the hardness and L(bright) and b(yellow) values were decreased, whereas a(red) value was increased. And the chewiness decreased at low apple pomace powder, and then increased again with an increasing amount of apple pomace powder. The antioxidant effects, total polyphenol content, and DPPH and ABTS radical scavenging activities all increased with an increased amount of apple pomace powder. In terms of the sensory evaluation, muffin added with 10% (w/w) 'Fuji' apple pomace powder showed the highest scores. Consequently, these results support the possible use of apple pomace powder as baking foods in food industry, as addition of apple pomace powder to enhance the quality, antioxidant and sensory properties of muffin, and provide better information for improving the added value of apple pomace.