

Kamolchat Pimdit 2012: Development of Reduce - Fat Puff Pastry using Fat Replacers. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Nantawan Therdthai, Ph.D. 150 pages.

A puff pastry product is a layered product made from sheeting and folding with fat. Normally, a fat content for sheeting and folding was about 50 - 100% (Baker's percentage). Therefore, this study aimed to develop a reduced fat pastry using fat replacers. According to a consumer survey (n = 400), consumers would like to have a reduced fat puff pastry with fat replacers that its price was in a range of 10 - 15 baht/piece. The target consumers were people who were over 21 years old and used to eat a puff pastry. The selected regular puff pastry formula was composed of 50% hard wheat flour, 50% soft wheat flour, 12% baker's margarine, 0.60% salt, 5% egg, 50% cool water and 60% pastry margarine (Baker's percentage). To develop the reduced fat puff pastry, fat replacers including 2.00% whey protein concentrate (WPC), 9.60% maltodextrin gel, 9.60% powder cellulose or 9.60% salatrim were used. The reduced fat puff pastry with salatrim had a good appearance and texture but had off - odor. The reduced fat puff pastry with maltodextrin gel, powder cellulose or WPC had high firmness and low crispness. Moreover, an increase in content of maltodextrin gel, powder cellulose or WPC increased moisture content and water activity. From preference test by 50 untrained panelists, the reduced fat puff pastry with 9.60% maltodextrin gel or with 2.00% WPC had the highest scores of appearance, crust color, puffiness, crispness, sweetness, saltiness and overall liking. Their water activity was 0.966 and 0.961, respectively. The developed product was composed of 24.65% - 33.45% moisture, 12.63 - 13.02% protein and 15.48 - 21.63% fat. Thus fat content of the reduced fat puff pastry was reduced by at least 47.55%, compared with regular puff pastry (41.24% fat content). From consumer test (n = 128), acceptability of products with 9.60% maltodextrin gel or 2.00% whey protein concentrate was more than 80%. Regarding a shelf - life test, the reduced fat puff pastry using fat replacers could be stored in refrigerator (4°C) for at least 4 days.

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