

3736064 NUFN/M : MAJOR : FOOD AND NUTRITION FOR DEVELOPMENT;
M.Sc. (FOOD AND NUTRITION FOR DEVELOPMENT)

KEY WORD : IRON-RICH FOOD / CHICKEN BLOOD CURD / PORCINE
BLOOD CURD / IRON/ HEME / NONHEME / COOKIES /
CHIPS

POONSUB INSUNG : DEVELOPMENT OF IRON-RICH FOOD
PRODUCTS FROM ANIMAL SOURCES. THESIS ADVISORS: VISITH
CHAVASIT, Ph.D., RATCHANEE KONGKACHUICHAI, Ph.D., PATTANEE
WINICHAGOON, Ph.D., SOMSRI CHAREONKIATKUL, D.Sc., PRAPAISRI
SIRICHAKWAL, Ph.D. 122 p. ISBN 974-663-655-3

Chicken and porcine blood curds are the iron-rich foods from animal, which have the lowest costs per mg of iron. The blood curds were pressed in order to remove certain amount of water before using in the developments of blood-fortified cookies and traditional Thai fish chips (Kow-krieb). The fortification was performed by adding blood curds into the original recipes at 10, 20, 30 and 40%. Total, heme and nonheme iron contents were analyzed. Iron contents of all forms were not significantly different in both kinds of blood curd ($p > 0.05$). Iron contents of the blood curds collected from 6 different markets and/or at different times were not much different and on average about 15 mg/100 g (about 230 mg/100 g dry basis). Pressed blood curds contained about 190 mg of iron/100 g dry basis. Addition of either chicken or porcine blood curd affected sensory qualities of cookies and chips. The sensory scores for general appearance, color, overall acceptability, odor, taste, texture, crispness and off-flavor of the fortified products: chicken blood fortified cookies (CkC) and chips (ChC), and porcine blood fortified cookies (CkP) and chips (ChP) were significantly better at the 10% fortification level ($p < 0.05$). The overall acceptability scores of the 40% CkC, 40% ChC, 40% ChP, and the 30% CkP products were higher than 5 on 9-point hedonic scale (neither like nor dislike, to like slightly); the products were studied for shelf stability along with the 10% fortification samples. The iron contents in the CkC and ChC products at 10 and 40% fortification levels were 3.07, 8.62 and 2.39, 5.15 mg/serving, respectively, and were 3.68, 7.24 and 2.57, 5.06 mg/serving in the CkP and ChP at 10, 30 and 10, 40% fortification levels, respectively. Upon processing, heme iron of fortified blood curds significantly changed into nonheme iron ($p < 0.05$). During the 30-day storage, the sensory acceptability scores of the blood-fortified cookies did not significantly change ($p > 0.05$). However, the scores for general appearance of deep-fried blood-fortified chips significantly changed during storage ($p < 0.05$). Nonheme iron contents in the products of higher fortification levels (30, 40%) significantly increased ($p < 0.05$). The water activities of the products were in the range of 0.3-0.4 and remained under 0.6 during storage. The peroxide values of the cookies at 10% fortification levels were lower than of the cookies at 30% and 40% fortification levels during storage. However, such difference was not observed in the deep-fried chips. Costs of raw materials for fortified cookies were about 56 and 65 Baht/kg in 10% and 30-40% fortification, respectively. While, the costs of deep-fried chips were about 50 and 60 Baht/kg in 10% and 40% fortification.