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**PAWEENA NA PATTHALUNG: HEME AND NONHEME IRON
CONTENT IN RAW AND COOKED ANIMAL PRODUCTS. THESIS
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Dietary iron is present in foods in two forms as heme and nonheme iron. Dietary heme iron is considered to be nutritionally important as it is more easily absorbed than nonheme iron. Animal sources have been considered to be an excellent source of dietary heme iron due to its high content. At present, information on the Thai Food Composition Table contains only total iron value with no separated heme and nonheme iron form. This information is necessary for estimating or predicting total available iron in a meal.

The objective of this study was to determine the concentration of total iron, heme and nonheme iron and vitamin C in animal products as affected by conventional cooking methods (boiling and steaming). All food samples were freshly purchased at three different shops in the same market from five local markets and two supermarkets in Bangkok during January to December, 1999. Heme and nonheme iron were analyzed by the Hornsey and Rhee methods, respectively. Total iron value was calculated by the summation of heme and nonheme iron. Vitamin C content was determined by AOAC method.

The results showed that there were large variations of nonheme iron content in pasteurization and ultra heat-treated milk ranging from 0.08– 0.18 mg/100ml whereas heme iron content was not detected. Heme iron was also not detected in both duck and hen's eggs while nonheme iron content was found in their egg yolks, ranging from 3.48 – 6.05 mg/100g wet weight. Cooked chicken breast and drumsticks were found to contain small amounts of heme iron (0.12 and 0.31mg/100g wet weight, respectively) and nonheme iron (0.27 and 0.63 mg/100g wet weight, respectively). Heme and nonheme iron in cooked beef loin were found to be 1.07 and 1.31 mg/100g wet weight. Liver is a good source of iron especially pork liver with approximately 20 – 30 % in form of heme iron. Cooked chicken and porcine blood curds were the best source of heme iron and the average was 9.17 and 15.38 mg/100 g wet weight, respectively with approximately 80 % of heme iron. Meatballs and sausage products were found to contain only small amounts of total iron, heme and nonheme iron. The richest sources of total iron were found in shellfish especially Sea mussels and Ark shells (14.73 and 17.73 mg/100g wet weight, respectively) with approximately 30 – 40 % of heme iron. Vitamin C in cooked samples was not detected except in cooked pork liver and chicken liver (2.24 and 3.00 mg /100 g wet weight). The effect of cooking in this study showed that heme iron level in the samples except for cooked blood curds was significantly reduced more than 50% by the boiling and steaming methods. Long heating exposure and small pieces of food also resulted in high losses of heme iron. In conclusion, this study indicated that cooked blood curds are the best animal source of dietary heme iron.