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Effect of boiling on the crude protein, haeme and non-haeme iron content of muscle meat from a cow carcass

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This study investigates the effect of boiling on the nutritional composition of muscle meat from a cow carcass, focusing on moisture, crude protein, heme iron, and non-heme iron. Muscle meat, a key dietary protein and bioavailable iron source, was boiled under different conditions, including boiling to dryness and boiling with stock for one and three days. Standard analytical techniques assessed changes in nutrient composition. Boiling significantly ($p < 0.05$) reduced moisture content, with the lowest level in meat boiled to dryness (60.87%) compared to raw muscle (74.57%). Crude protein increased with prolonged boiling, peaking at 83.35% in meat boiled to dryness, followed by 78.83% (boiled for one day with stock), and 74.70% (boiled for three days with stock). Raw muscle showed the lowest protein content (18.63%). Heme iron decreased significantly with boiling, from 132.61 µg Fe/µg Hematin in raw muscle to 53.31 µg Fe/µg Hematin in meat boiled for three days. Non-heme iron content increased, reaching 791.13 mg/kg in meat boiled to dryness, compared to 209.57 mg/kg in raw muscle. These findings underscore the need for optimized boiling methods to preserve nutritional quality, providing insights into improving dietary protein and iron intake in nutrient-deficient regions.

Keywords: Boiling effects, crude protein, heme iron, non-heme iron.