

Effects of varying degrees of doneness on the formation of Heterocyclic Aromatic Amines in chicken and beef satay

Abstract

The study was carried out to determine the effect of cooking method on Heterocyclic Aromatic Amines (HAs) concentration in grilled chicken and beef (satay). Six common HAs were investigated: 2-amino-3-methylimidazo [4,5-f]quinolone (IQ), 2-amino-3,4-dimethylimidazo [4,5-f]quinoline (MeIQ), 2-amino-3,8-dimethylimidazo [4,5-f]quinoxaline (MeIQx), 2-amino-3,4,8-trimethylimidazo[4,5-f]quinoxaline (4,8-DiMeIQx), 2-amino-3,7,8-trimethylimidazo [4,5-f]quinoxaline (7,8-DiMeIQx), and 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP). Chicken and beef satay samples were grilled to medium and well done level of doneness. Charcoal grilled (treatment A), microwave pre-treatment prior to grilling (treatment B), and microwave-deep fried (treatment C) were applied to beef and chicken satay samples. The satay samples which were microwaved prior to grilling (B) showed significantly ($p < 0.05$) lower HAs concentration as compared to those charcoal grilled (A). Both medium and well done cooked beef and chicken satay samples that were microwaved and deep fried (C) as an alternative method to grilling were proven to produce significantly lesser HAs as compared to charcoal-grilled (A) and microwaved prior to grilling (B).