

Effect of organic acid ingredients in marinades containing different types of sugar on the formation of heterocyclic amines in grilled chicken

ABSTRACT

The aim of the study was to determine the use of alternative organic acids in formulating marinade ingredients to reduce heterocyclic amines (HCA) in grilled chicken (satay). Samples were marinated with table sugar, brown sugar, and honey with the addition of tamarind, lemon, lime, and calamansi for 24 h at 4 °C. The pH readings before and after marinating were measured. HCA concentrations before and after grilling were quantified. There was a significant difference ($p < 0.05$) in the combined HCAs among the control and marinated grilled chickens. Using lemon in marinades containing table sugar, concentrations of DiMeIQx were significantly reduced ($p < 0.006$) from 16.5 ng/g (low) to 8.30 ng/g for (high) concentrations of organic acid ingredients. The mean pH of the treated samples was significantly lower ($p < 0.05$) than in the control samples. Calamansi was found to reduce HCAs in marinades containing table sugar and brown sugar, whereas tamarind in marinades containing honey.

Keyword: Heterocyclic amines; Lemon; Tamarind; Calamansi; Marinated grilled chicken