

Effect of frying instructions for food handlers on acrylamide concentration in French fries : an explorative study.

Abstract

The objective of this study was to obtain insight into the effect of frying instructions on food handlers' control decisions in restaurants and to investigate the impact of control decisions on the variation and concentration of acrylamide in French fries. The concentrations of acrylamide and reducing sugars were analyzed, the frying temperature and time were measured, and thawing practices were observed. The results obtained before and after instructions were provided to the food handlers were compared for restaurants as a group and for each restaurant. Frying instructions supported food handlers' decisions to start frying when the oil temperature reached 175°C; all handlers started frying at the correct temperature. However, the effect of the instructions on the food handlers' decisions for frying time differed; most handlers increased the frying time beyond 240 s to achieve crispier French fries with a final color dictated by their preference. Providing instructions did not result in a significant difference in the mean concentration of acrylamide in French fries for the restaurants as a group. However, data analyzed for each restaurant revealed that when food handlers properly followed the instructions, the mean concentration of acrylamide was significantly lower (169 µg/kg) than that before instructions were provided (1,517 µg/kg). When food handlers did not complying with the frying instructions, mean acrylamide concentrations were even higher than those before instructions were provided. Two different strategies were developed to overcome the noncompliant behavior of food handlers: establishing requirements for the features of commercial fryers and strict monitoring of compliance with instructions.

Keyword: Acrylamide; French fries; Food handler; Frying instructions.