

Effect of initial aflatoxin concentration, heating time and roasting temperature on aflatoxin reduction in contaminated peanuts and process optimisation using response surface modelling.

Abstract

Response surface methodology was applied to optimise the aflatoxin reduction in both naturally and artificially contaminated samples using dry oven. The effect of initial aflatoxin concentration (0-400ngg-1), heating time (30-120min) and temperature (90-150°C) was evaluated. The maximum reduction of AFB1 (78.4%) and AFB2 (57.3%) of artificially contaminated samples with initial aflatoxin concentration of 237 and 68ngg-1, and those of AFG1 (73.9%) and AFG2 (75.2%) with initial aflatoxin concentration of 215 and 75ngg-1 was obtained at 150°C. The maximum reduction of AFB1 (80.2%) and AFB2 (69.7%) of naturally contaminated samples with initial aflatoxin concentration of 174 and 25ngg-1 was obtained at 150°C and 130°C, respectively.

Keyword: Aflatoxins; Dry oven roasting; HPLC with fluorescence detection; Peanuts; Time and temperature.