

## **Contribution of lipid towards acrylamide formation during intermittent frying of French fries**

### **ABSTRACT**

This study aims to investigate the influence of lipid towards acrylamide formation during intermittent frying of French fries. A total of 80 frying cycles were performed on par-fried potato strips in different vegetable oils namely as red palm olein, palm olein, sunflower oil and soybean oil while acrylamide in French fries were analysed. Oil was sampled for every sixteenth cycle of frying and subjected to physico-chemical analyses, i.e. peroxide value (PV), p-anisidine value (p-AV), total oxidation (TOTOX) value and free fatty acid (FFA). A weak positive but significant correlation and contribution were found between acrylamide concentration in French fries with p-AV ( $r = 0.254$ ,  $P \leq 0.05$ ) and FFA ( $r = 0.253$ ,  $P \leq 0.05$ ); however, this was not the case of PV and TOTOX value. Indeed, contribution of FFA ( $\beta = 186$ ,  $P \leq 0.05$ ) towards acrylamide formation was stronger than p-AV ( $\beta = 4.60$ ,  $P \leq 0.05$ ). Except for palm olein, the number of frying cycle significantly affected acrylamide concentration in French fries. Lowest acrylamide concentration ( $452 \pm 5.6 \mu\text{g/kg}$ ) was observed when palm olein is used as frying media. Overall, diverse effects of oil types and frying cycles reported in the literature were possibly due to weak association of lipid oxidation and hydrolysis with acrylamide.

**Keyword:** Acrylamide; Lipid; Intermittent frying; French fries