

Effect of fat-soluble anti-oxidants in vegetable oils on acrylamide concentrations during deep-fat frying of French fries

ABSTRACT

Background: This study attempted to evaluate the effect of fat-soluble anti-oxidants in vegetable oils on acrylamide during the deep-fat frying of French fries. **Methods:** Three vegetable oils with different fat-soluble anti-oxidant contents were selected and par-fried potato strips were fried in these oils. Acrylamide in the French fries at different frying times (at 180 °C) and over 10 consecutive frying sessions were measured. The antioxidant contents and quality degradation of oils were monitored before and after the 5th and 10th consecutive frying sessions. **Results:** The effect of the fat-soluble anti-oxidants in red palm oil on the acrylamide was more apparent when a prolonged frying time was used for consecutive frying sessions than when different frying conditions were used. Using red palm oil, acrylamide concentration in French fries significantly dropped to the lowest level, at 524 ng g⁻¹, after the 10th frying session. The β-carotene content after the 10th frying session was the highest in red palm oil. **Conclusion:** The use of red palm oil for deep-fat frying French fries can be a mitigation strategy to reduce acrylamide formation, but further studies are necessary to investigate the influence of different types of fat-soluble anti-oxidants on the inhibition of acrylamide formation.

Keyword: Fat-soluble anti-oxidants; Vegetable oils; Acrylamide; French fries