

## Effects of temperature and NaCl on the formation of 3-MCPD esters and glycidyl esters in refined, bleached and deodorized palm olein during deep-fat frying of potato chips

### ABSTRACT

The effects of frying duration, frying temperature and concentration of sodium chloride on the formation of 3-monochloropropane-1,2-diol (3-MCPD) esters and glycidyl esters (GEs) of refined, bleached and deodorized (RBD) palm olein during deep-fat frying (at 160 °C and 180 °C) of potato chips (0%, 1%, 3% and 5% NaCl) for 100 min/d for five consecutive days in eight systems were compared in this study. All oil samples collected after each frying cycle were analyzed for 3-MCPD esters, GEs, free fatty acid (FFA) contents, specific extinction at 232 and 268 nm (K232 and K268), p-anisidine value (pAV), and fatty acid composition. The 3-MCPD ester trend was decreasing when the frying duration increased, whereas the trend was increasing when frying temperature and concentration of NaCl increased. The GEs trend was increasing when the frying temperature, frying duration and concentration of NaCl increased. All of the oil qualities were within the safety limit.

**Keyword:** 3-Monochloropropane-1,2-diol; Glycidyl esters; Palm olein oil; Deep-fat frying; Potatoes