Acrylamide generation in pre-treated potato chips

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Acrylamide formation in potato slices fried at two different temperatures (170 and 190 degrees C) was investigated under different pre-processing conditions. Potato slices (Saturna variety, diameter: 37 mm, width: 2.2 mm) were either fried at 170 degrees C per 5 min or 190 degrees C per 3.5 min to reach a final moisture content of 1.8 g water/100g (wet basis). Prior to frying, potato slices were treated in one of the following ways: (i) Raw slices without any pre-treatment were considered as the control; (ii) Blanching: which was accomplished in 2 temperature-time combinations: 60 degrees C for 30 min and 90 degrees C for 5 min; (iii) Slices blanched treated such as in (ii) were then dried at 60 degrees C until a final moisture content of 60 g water/100 g (wet basis); (iv) Slices blanched such as in (ii) were then impregnated in a 3 g/100 g of NaCl solution for 5 min at 25 degrees C. Acrylamide content in potato chips was determined after frying at 170 or 190 degrees C. Frying at 190 degrees C increased by almost 130 percent the acrylamide content of all the pre-treated samples (average value) fried at 170 degrees C. Soaking of blanched potato slices in the 3 g/100 g of NaCl solution per 5 min at 25 degrees C, reduces acrylamide formation in potato chips by 11 percent after frying at 170 degrees C. However when the slices are blanched directly in the 3 g/100 g of NaCl solution at 60 degrees C for 30 min, their acrylamide formation increased surprisingly by similar to 90 percent when frying at 170 degrees C.

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