Color development and acrylamide content of pre-dried potato chips - DTU Orbit
(04/02/2019)

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The objective of this work was to study the development of color formation in pre-dried potato slices during frying and acrylamide formation in the final potato chips. Color measurement was done by using an inexpensive computer vision technique which allowed quantifying representatively and precisely the color of complex surfaces such as those of potato chips in L"a"b" units from RGB images. Prior to frying, potato slices (Desiree variety, diameter: 37 mm, width: 2.2 mm) were blanched in hot water at 85 degrees C for 3.5 min. Unblanched slices were considered as the control. Slices of the same dimensions were blanched as in the previous step, and then air-dried until reaching a moisture content of 60% (wet basis). These samples were called pre-dried potato slices. Potato slices were fried at 120 degrees C, 140 degrees C, 160 degrees C and 180 degrees C until reaching moisture contents of similar to 1.8% (total basis) for color quantification. Acrylamide concentration was determined only in final chips fried at 120 degrees C, 150 degrees C and 180 degrees C and compared with that of two brands of commercial chips produced in Chile (Moms and Frito Lay). Color values in L"a"b" units were recorded at different sampling times during frying at the four mentioned temperatures using the total color difference parameter (Delta E). Pre-drying did not affect the color of potato chips considerably when compared against blanched chips; however when fried at 180 degrees C, pre-dried potato chips present 44%, 22%, 44% lower acrylamide content than that of the control, Moms and Frito Lay chips, respectively.

General information
State: Published
Organisations: Division of Food Chemistry, National Food Institute
Contributors: Pedreschi, F., León, J., Mery, D., Moyano, P., Pedreschi, R., Kaack, K., Granby, K.
Pages: 786-793
Publication date: 2007
Peer-reviewed: Yes

Publication information
Journal: Journal of Food Engineering
Volume: 79
Issue number: 3
ISSN (Print): 0260-8774
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.54 SJR 1.279 SNIP 1.671
Web of Science (2017): Impact factor 3.197
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.71 SJR 1.476 SNIP 1.837
Web of Science (2016): Impact factor 3.099
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.58 SJR 1.475 SNIP 1.858
Web of Science (2015): Impact factor 3.199
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.44 SJR 1.496 SNIP 1.96
Web of Science (2014): Impact factor 2.771
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 3.1 SJR 1.348 SNIP 1.891
Web of Science (2013): Impact factor 2.576
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.84 SJR 1.36 SNIP 1.978
Web of Science (2012): Impact factor 2.276
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.84 SJR 1.334 SNIP 1.911
Web of Science (2011): Impact factor 2.414
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.447 SNIP 1.795
Web of Science (2010): Impact factor 2.168
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.423 SNIP 1.614
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.296 SNIP 1.517
Scopus rating (2007): SJR 1.058 SNIP 1.95
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.099 SNIP 1.552
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.802 SNIP 1.425
Scopus rating (2004): SJR 0.875 SNIP 1.452
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.877 SNIP 1.613
Scopus rating (2002): SJR 1.191 SNIP 1.48
Scopus rating (2001): SJR 0.92 SNIP 1.232
Scopus rating (2000): SJR 0.681 SNIP 0.838
Scopus rating (1999): SJR 0.721 SNIP 1.137
Original language: English
Keywords: frying, color, acrylamide, pre-drying, blanching, potato chips
DOIs:
10.1016/j.jfoodeng.2006.03.001
Source: orbit
Source-ID: 230007
Research output: Research - peer-review ♦ Journal article – Annual report year: 2007