Process Optimization of Blister Fried Peanuts

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Blister fried peanuts are a specialty product with origins in Eastern North Carolina and Virginia that are characterized by a “blistered” surface and a distinct crispy and crunchy texture. Central to preparing this product is a wetting step, in which peanuts are intentionally soaked/boiled in water, drained, and subsequently oil roasted (fried). During frying, steam is released from the peanuts, which creates ‘blisters’ on the peanut surface resulting in a distinct appearance and texture. Although the peanut industry currently produces acceptable blister fried peanuts, there is no published research specific to this product. Accordingly, a robust and repeatable lab scale process for ‘blister frying’ peanuts was developed. Utilizing this process, the following parameters for the central wetting step were systematically varied for super XL blanched, Virginia peanuts to understand effects on product quality: soak temperature (23 or 100°C); soak time (10 or 30 min); and peanut to water ratio during soaking (1:5 or 4:3). After frying, peanuts were evaluated for color, blister counts using digital images and ImageJ software, and texture/flavor using a trained sensory panel. Increasing soak time from 10 to 30 min increased \( p<0.05 \) the number of blisters after frying. Boiling versus a room temperature soak substantially increased \( p<0.05 \) the numbers of blisters after frying, but there was a texture ‘penalty’ in that boiled treatments were typically less \( p<0.05 \) crispy or crunchy after frying, although all blister fried peanuts were substantially more crispy and crunchy than either the oil roast control. The 1:5 soak ratios offered no meaningful improvements to product quality and would not be recommended from a production perspective. Peanuts that blistered extensively had higher \( p<0.05 \) moisture contents and were softer (as measured by a Kramer Shear Cell compression test) going into the fryer. However, these heavily blistered peanuts were lighter (increased Hunter L value) in color and tended to be less crispy, crunchy or hard as peanuts that blistered less extensively. While acceptable, roasted peanut flavor of blister fried peanuts was also less intense than dry roasted or oil roasted peanuts (prepared from same starting material), and this was attributed to protein/sugar being leached into the soak water as confirmed by chemical analyses. This work provides a scientific framework from which ‘blister frying’ of peanuts can be further investigated to improve commercial product quality and processing efficiency.