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Relation between crust development and heterocyclic aromatic amine formation when air-roasting a meat cylinder

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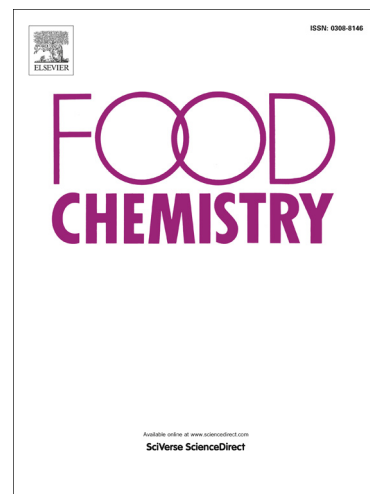
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14

15 **Abstract**

16 The meat crust that develops during cooking is desired by consumers for its
17 organoleptic properties, but it is also where heterocyclic aromatic amines (HAs) are
18 formed. Here we measured HAs formation during the development of a colored crust on
19 the surface of a beef meat piece. HAs formation was lower in the crust than previously
20 measured in meat slices subjected to the same air jet conditions. This difference is
21 explained by a lower average temperature in the colored crust than in the meat slices.
22 Temperature effects can also explain why colored crust failed to reproduce the
23 plateauing and decrease in HAs content observed in meat slices. We observed a
24 decrease in creatine content from the center of the meat piece to the crust area. In terms
25 of the implications for practice, specific heating conditions can be found to maintain a
26 roast beef meat aspect while dramatically reducing HAs content.

27

28 **Key words:** Crust, Heterocyclic amines, Heat, Juice, Transfer, Beef, Hot air.

29 **Highlights:**

30 HA formation and degradation differ between roast beef crust and meat slices;

31 Creatine content decreases from the center of the meat piece to the crust;

32 HA content can be dramatically reduced without losing a 'roasted' look.

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