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Reducing Heterocyclic Amines (HA) formation in beef meat and improving our knowledge on consumer exposure

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Heterocyclic Amines (HA) are carcinogens which are formed in very low amounts in roasted and grilled meat. HA formation rate increases with temperature. To improve our knowledge on consumer exposure and on crust formation, the concentration of HA was accurately measured in meat under different time-temperature conditions. Alternative heat treatments were tested to obtain beef meat with reduced HA content.

Results lead to the fact that present predictions of consumer exposure to HAs remain disputable. This is mainly due to: (1) the difference in HA degradation during the laboratory experiments compared to practical cooking treatments, (2) the way the crust is defined and analysed, and (3) problems of transposition of thermal results from one cooking condition to another. From a practical point of view new control procedures can be developed to decrease the oven temperature as soon as the temperature at the surface of the meat exceeds 120°C-130°C. This will lead to the formation of coloured crust which will have the aspect of a roasted product while remaining safe of HAs. In existing household equipment it can be advised to decrease the oven temperature below 150°C as soon as a coloured crust appears at the surface of the meat. More generally during grilling and roasting consumption of juice which has been in contact with surfaces heated over 150°C has to be avoided.

References:

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