

Acrylamide mitigation strategies: critical appraisal of the FoodDrinkEurope toolbox

Palermo, M., Gökmen, V., De Meulenaer, B., Ciesarová, Z., Zhang, Y., Pedreschi, F., & Fogliano, V. (2016). Acrylamide mitigation strategies: Critical appraisal of the FoodDrinkEurope toolbox. *Food & function*, 7(6), 2516-2525. <10.1039/c5fo00655d> Accessed 26 Nov 2020.

Abstract

FoodDrinkEurope Federation recently released the latest version of the Acrylamide Toolbox to support manufacturers in acrylamide reduction activities giving indication about the possible mitigation strategies. The Toolbox is intended for small and medium size enterprises with limited R&D; resources, however no comments about the pro and cons of the different measures were provided to advise the potential users. Experts of the field are aware that not all the strategies proposed have equal value in terms of efficacy and cost/benefit ratio. This consideration prompted us to provide a qualitative science-based ranking of the mitigation strategies proposed in the acrylamide Toolbox, focusing on bakery and fried potato products. Five authors from different geographical areas having a publication record on acrylamide mitigation strategies worked independently ranking the efficacy of the acrylamide mitigation strategies taking into account three key parameters: (i) reduction rate; (ii) side effects; and (iii) applicability and economic impact. On the basis of their own experience and considering selected literature of the last ten years, the authors scored for each key parameter the acrylamide mitigation strategies proposed in the Toolbox. As expected, all strategies selected in the Toolbox turned out to be useful, however, not at the same level. The use of enzyme asparaginase and the selection of low sugar varieties were considered the best mitigation strategies in bakery and in potato products, respectively. According to authors' opinion most of the other mitigation strategies, although effective, either have relevant side effects on the sensory profile of the products, or they are not easy to implement in industrial production. The final outcome was a science based commented ranking which can enrich the acrylamide Toolbox supporting individual manufacturer in taking the best actions to reduce the acrylamide content in their specific production context..