

Analysis of acrylamide content in heated popcorn



In April 2002, scientists from the Swedish National Food Authority and Stockholm University announced for the first time that some cereals were baked or fried to produce acrylamide. Because of the potential neurotoxicity, genotoxicity and carcinogenicity of Am, this announcement was immediately followed. It has aroused widespread concern in the food industry around the world, and called this harmful substance in foods "protoxin"

. Subsequent Am content in food has become one of the concerns of public safety and health. At present, the determination of Am in food by HPLC-MS and GC-MS is mainly carried out in the world, and C-acrylamide is used as an internal standard. However, sample pretreatment of HPLC-MS and GC-MS is cumbersome and needs to be derivatized. Conducive to routine analysis.

At present, the research on Am in food at home and abroad mainly focuses on fried and baked foods. The research on Am content in microwave foods has not been reported in other literatures except the reports of this laboratory. However, the potential hazards of microwave ovens to food have attracted domestic and international attention. The company compares the production of Am's popcorn material in [microwave drying machinery](#) with microwave and the content of Am in conventional heated popcorn and autoclaved popcorn.

Safety of microwave puffing [popcorn machine](#)

The experimental results show that no matter which puffing method is adopted, the high sugar content of the reducing sugar will lead to the increase of Am content in popcorn; the low temperature heating characteristics

and rapid heating characteristics of microwave cause the Am content in microwave popcorn to be lower than that in conventional heated popcorn. content.

Whether the macroscopic temperature of microwave heating exceeds the critical temperature of Maillard reaction (120 ° C) may be the decisive factor in determining microwave inhibition or promoting the formation of Am. Any factor that causes the Maillard reaction to increase during popcorn expansion may result in an increase in Am content. the reason.

In 2002, the German Federal Institute for Consumer Health Protection and Veterinary Medicine required that the Am content should be below 1000 µg per 1 kg of food. In terms of Am hazard, microwave popcorn is generally safe; the Am content in conventional heated or autoclaved popcorn is generally higher than microwave popcorn, which is more harmful.