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Application of atmospheric-pressure argon plasma jet for bread mold decontamination

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Atmospheric-pressure plasma (APAP) is a promising non-thermal technology for microbial control and prevention minimally affecting quality of foods. Effect of APAP jet on the growth of bread molds, including *Aspergillus* sp., *Rhizopus* sp., and *Penicillium* sp., isolated from white bread were investigated. The molds were isolated, verified, cultured to fully grown on potato dextrose agar (PDA), and subsequently treated with APAP jet using plasma generating power at 24 W for 5, 10, and 20 min, respectively. The inhibition of mold growth was investigated by comparing fungal dry weights and the effect on fungal cell structure was observed using compound light microscope. The results indicated that the 20-min treatment time is most effective in retarding the growth of the three bread molds. However, this level of generating power did not lead to destruction of the cellular structures for all the three fungi. Plasma generating power and treatment time are significant parameters determining the success of bread mold decontamination and further investigation on real bread matrix is needed.

Primary authors: Dr THONGLOR, Panakamon; Dr AMNUAYCHEEWA, Plaimein (King Mongkut's University of Technology North Bangkok)

Presenter: Dr THONGLOR, Panakamon

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