FOOD-SAFE COATINGS TO PREVENT INFESTATIONS OF THE HAM MITE ON DRY CURED HAMS

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The ham mite, *Tyrophagus putrescentiae*, is a serious pest of dried meats and cheeses. Infestations of *T. putrescentiae* are controlled with the fumigant methyl bromide in the US under a Critical Use Exemption that is due to expire in 2017. Effective alternatives to methyl bromide are needed before the fumigant is totally phased out. The objective of this research was to use laboratory assays to investigate the effectiveness of food-safe compounds in coatings to prevent infestation of *T. putrescentiae* on dry cured hams.

Thirty-five compounds that are considered "GRAS", generally regarded as safe as food additives in the US were screened in laboratory assays for their abilities to prevent mite infestations. Small ham cubes were dipped in a given solution and then inoculated with 20 adult mites followed by assessment of population growth after incubation for 14 days. Ham pieces dipped in solutions of either 1,2-propanediol,1,3- propanediol, lard, ethoxyquin or butylated hydroxytoluene (BHT) prevented or significantly reduced mite population growth. Behavioral assays revealed that more mites oriented to the untreated control ham cubes, and more eggs were laid on these untreated ham cubes, compared to cubes treated with various dips. Our results also indicated that carrageenan in combination with propylene glycol alginate (PGA) that had 40 % of propylene glycol was effective in reducing mite numbers by 95% on whole hams during aging when compared to untreated whole hams. Whole hams coated with polysaccharide gels could be properly aged under the same conditions as untreated hams without negatively impacting sensory quality .

This research shows that several food-safe compounds have potential to control *T. putrescentiae* infestations on dry-cured hams and that such coatings may represent important pest prevention methods for a comprehensive IPM program that may be an alternative to methyl bromide fumigation.