# PROTECTING HAMS FROM THE MITE *TYROPHAGUS PUTRESCENTIAE* USING FOOD-SAFE APPROACHES

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*Tyrophagus putrescentiae*, commonly known as the ham mite or cheese mite, is the most serious arthropod pest of southern dry-cured hams in the US and elsewhere. Methyl bromide has been used for years to disinfest hams and the structures in which they are processed and stored, but methyl bromide is scheduled to be banned for such use in the near future. Research indicates that phosphine may potentially be a suitable alternative for mite control in ham facilities, but non-fumigant alternatives are needed for situations in which fumigation should be used only sparingly. The research reported here sought to investigate materials to coat or spray directly on aging hams that would prevent or reduce mite infestations while being safe for consumers and other contacting treated hams.

A series of laboratory experiments were conducted in which 1-cm square cubes of ham were dipped into a test compound of a given concentration for 1.0 minute and then placed in a ventilated glass jar and inoculated with 20 adult mites. Jars were held for 14 days to allow for mite reproduction and population growth, after which the total number of mite adults and nymphs were counted and compared to numbers produced on other treated ham pieces and on control hams dipped in water only. Three groups of experiments were conducted that compared common food oils, synthetic polyols and common legal food preservatives. Among oils tested, 100% lard from pork fat completely prevented mite reproduction on treated ham pieces, while vegetable oils such as olive, corn and soybean had minimal effects on mites. Of the polyols, glycerol had little effect on mites while propylene glycol at 100% or 50% completely prevented or significantly reduced mite reproduction. Other short-chain di-ols had significant effects on mite reproduction. Of the other food preservatives tested the various salts of sorbic and propionic acids were effective at preventing mite growth when applied as 10% solutions in water. Our work so far suggests that approved food oils and synthetic food preservatives show potential for protecting southern dry cured hams from mite infestation, and future work will need to address the effects of these additives, if any, on the quality of hams during the aging process and on consumer acceptability.