IDENTIFICATION OF DRY CURED HAM MITES

Recio-García, M. D. y García-Cachán, M. D.
Estación Tecnológica de la Carne, Junta de Castilla y León, Apdo. 58, 37770 Guijuelo, Salamanca, España. e-mail: marilorg@arrakis.es

INTRODUCTION

Mites are small arthropods that are adapted to different habitats. Usually they can be found in farms, bird nests, beehives, and associated to domestic animals, rodents and their dens. In both urban and rural surroundings mites are part of domestic dust, contaminating cupboards, cloths and fabrics. Mites in Astigmata suborder are one of the most important problems affecting meat industry especially that dedicated to manufacturing of dry cured hams (Jorrín y col., 2001). In a very short time, mites spread all over the ham from an initial point and they cause crossed contaminations along the different parts of ham processing. A high growth of mites is favoured by the temperature and relative humidity found during the drying and ripening phases. It is also observed a seasonal variation and more individuals can be encountered in spring and autumn than in summer and winter due to the environmental conditions such as temperature and relative humidity.

Under an economical point of view, mites cause great losses as they dirty and ruin stored foods, like hams, and that interferes with the curing process. They also negatively influence the ripening phase as they feed on the fungus flora on the ham and another microorganisms can proliferate and lead to undesirable putrefaction. There are a great number of hams that are rejected by consumers and dealers due to mites existing on the ham or to faults originated by them. The damages inflicted to hams are related not only to their unpleasant and disgusting appearance but also to their presence in holes caused by fly larvae.

There is no authorised chemical treatment for these mite pests in dried meat, as it is shown in the Directive 93/57/CEE of June, 29 th. of the European Community Council. At present, manufacturers have a few techniques to fight against this pest. The most common are the individual washing of hams and the spreading of olive oil or lard over the whole ham. All these practices involve the wasting of much time and labour and, subsequently, a price increase. And what is worst, hams are not efficiently protected against successive reinfections. Therefore, it is necessary to continue investigating other methods to fight this pest.

OBJECTIVE

The actual work is part of a project devoted to eliminate mites in dry cured meat applying a biological control. The objective of this communication is to identify the different mite species that are present on Iberian hams from Guijuelo, a typical ham producing area.

MATERIALS AND METHODS

With the aim of getting a representative sample, several manufacturers were asked to visit their drying chambers and cellars. The samples were taken in the coxo-femoral area of infested hams, sweeping out their surface with a paintbrush. Some slides were prepared, with part of each sample, immediately. The other part of the samples was cultured in laboratory conditions where temperature and relative humidity were controlled. Hoyer´s liquid was used when preparing the slides (Barrientos, 1988). The used taxonomy keys led to identify the genus and species of the found mites.

RESULTS AND DISCUSSION

The taxonomy of the found species is shown in table 1. The obtained dates are presented in table 2. As it can be seen, ten industries were visited and several samples were taken in their drying chambers and cellars. Mites genus and species were determined following the taxonomy keys (Robertson, 1959; Huges, 1976; Evans, 1992 and Fain and Fauvel, 1993 in Jorrín *et al*., 2001). It must be taken into account that the identification only can be done on adult males. This is because their species characters are not well developed in larvae, besides mite species can not be separated using females as they do not have enough characters to do so. In the studied populations it con be observed that females number is greater than males one as it has been reported by different authors (García et al., 1991 in Escudero González, *et al*., 2001).

According to Jorrín et al., in Spain several predominant species occurring on Iberian ham were reported: *Tyrolichus casei* and *Tyrophagus putrescentiae* in Cataluña, Extremadura and Portuguese Alentejo; *Tyrophagus putrescentiae* in Huelva (southwest of Spain) and *Tyrophagus longior* in Castilla and León. In the actual work three species were found: *Tyrolichus casei, Tyrophagus longior* and *Tyrophagus palmarum*. *Tyrolichus casei* was the majority found species. It must be emphasized that *Tyrophagus palmarum* was not reported previously in Spain but in Parma. On the other hand, the species formerly reported as majority in Castilla and León had changed and now Tyrolichus casei was the predominant one. This might be due to the moving of cured and fresh hams across the different production areas in Spain (south Castilla and León, Extremadura, west Andalusia). It also might affect the time of the year when the samples were taken (autumn-winter) since mite population varies seasonally, that is, there are more individuals in spring and autumn than in winter and summer (Lorenzo, 1996).

Moreover, it was found another mite species that was suspected to be *Blattisocius dendriticus*. This mite is easily observable on the ham for its great mobility and it is thought to be other mites' predator.

CONCLUSIONS

As it can be seen from the results, we can conclude that, at present, the majority mite species living on cured hams in Guijuelo is *Tyrolichus casei*. The fact that other majority species, different from the ones reported previously, were observed, might be due to seasonal variation and crossed contaminations. The presence of another mite species, like *Blattisocius dendriticus*, could be due to crossed contaminations that are very frequent during dried ham processing. For the moment, no relationships had been found between temperature and relative humidity conditions and the encountered species.

Table 1. Found species taxonomy:

Phylum:	Arthropoda	Arthropoda	Arthropoda
Class:	Arachnida	Arachnida	Arachnida
Subclass:	Acari	Acari	Acari
Order:	Acarina	Acarina	Acarina
Suborder:	Astigmata	Astigmata	Astigmata
Superfamily:	Acaroidea	Acaroidea	Acaroidea
Family:	Acaridae	Acaridae	Acaridae
Genus:	Tyrophagus	Tyrophagus	Tyrolichus
Species:	longior	palmarum	casei

Table 2. Found mite species:

		Temperature °C	Rel. humidity %	*T. longior*	*T. casei*	*T. palmarum*
Factory 1	Drying ch.	7.2	70.6	6	-	-
	Cellar	13.1	66.2	3	-	-
Factory 2	Drying ch.	9.0	70.0	-	13	-
	Cellar	14.0	65.7	-	7	-
Factory 3	Drying ch.	14.6	70.7	5	1	-
	Cellar	13.9	67.0	-	9	-
Factory 4	Drying ch.	22.0	65.3	-	4	-
	Cellar	10.0	75.7	-	3	-
Factory 5	Drying ch.	7.6	82.2	1	2	-
	Cellar	13.2	57.0	-	7	-
Factory 6	Drying ch.	15.1	79.3	-	3	-
	Cellar	13.0	69.1	-	4	-
Factory 7	Drying ch.	14.3	73.2	-	-	2
	Cellar	15.3	69.8	-	3	-
Factory 8	Drying ch.	11.0	76.7	-	-	2
	Cellar	14.0	88.9	1	-	-
Factory 9	Drying ch.	13.4	71.0	1	-	-
	Cellar	12.3	85.4	-	-	1
Factory 10	Drying ch.	15.0	78.4	-	-	1
	Cellar	17.0	86.3	2	-	2
Total indiv.				19	56	8
% global				22.9%	67.5%	9.6%

Drying ch.: drying chamber

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