A. FAIN AND B. J. HART

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A NEW, SIMPLE TECHNIQUE FOR EXTRACTION OF MITES, USING THE DIFFERENCE IN DENSITY BETWEEN ETHANOL AND SATURATED NaCl (PRELIMINAY NOTE)

BY A. FAIN [1] and B. J. HART [1]

EXTRACTION OF MITES

ABSTRACT : An new floating method for extracting mites from house-dust, cultures etc..., using ethanol 80 % and aqueous saturated NaCl, is described. An average of 97 to 98 % of the mites is extracted.

EXTRACTION DES ACARIENS

RÉSUMÉ : Une nouvelle méthode d'extraction des acariens à partir de poussières de maison, de cultures etc... est décrite. Elle utilise successivement de l'alcool éthylique à 80 % et une solution saturée de NaCl. Le pourcentage d'acariens extraits par cette méthode est en moyenne de 97 à 98 %.

INTRODUCTION

We describe herein, a new method for extraction of mites and other microarthropods from various media, such as storing alcohol which had contained small vertebrates, Berlese extracts, house-dust and laboratory mite cultures.

This technique is very simple and extremely efficient, from 90 to 100 % of the mites are extracted with an average of 97 to 98 %. It does not require sieving, centrifugation or filtration, and it does not use any toxic or caustic ingredient, only ethanol (ethyl alcohol) at 80 % and an aqueous saturated solution of NaCl.

This new method is a modification of our previous technique (FAIN, 1966) which utilises aqueous saturated NaCl for the extraction of mites from house-dust. We have improved this method by soaking samples in 80 % ethanol for several hours (at least 4 hours) before the addition of the salt solution, thus exploiting the difference in density between 80 % ethanol and saturated NaCl to float any mites present.

DESCRIPTION OF THE METHOD

1. Extraction of mites from alcohol samples (Berlese extracts, Museum jars with preserved vertebrates) : We use cylindrical vials with a flat bottom, about 10 cm high and 3 cm wide. The sediment (or part of it) is poured into the vial and after a few minutes all the supernatant is carefully removed and replaced by 50 to 80 ml of the salt solution. After about 15 minutes the supernatant salt solution is carefully distributed into three small petri dishes. During this operation the vial is gently turned in order to remove the mites attached to its walls. The first dish contains almost all the mites, the second contains a few mites or

1. Institut royal des Sciences naturelles de Belgique, Rue Vautier, 29, B-1040, Bruxelles.

debris of mites, the third representing the bottom of the sample generally does not contain mites.

This technique is particularly useful for samples containing many debris as it is the case for Museum jars with alcohol-preserved mammals or birds.

2. Extraction of mites from house-dust or mite cultures : The technique is the same as for the previous samples except that dust or the cultures are soaked for four hours in ethanol 80 % before the sediment is put in contact with the salt solution. Small samples of dust (0,1 g) are used in this method to facilitate detachment of the mites from the dust debris in which they are normally trapped.

A more complete study of the method is the object of a future publication.

Discussion

The impregnation of the mites by ethanol 80 % has lowered significantly their density. This lowering of density is easy to demonstrate by using an alcoholic sample of mites from a Berlese funnel. If, in that sample we remove the supernatant alcohol and replace it by tap water, in which mites normally sink, we observe that about 90 % of the mites raise instantaneously to the surface of the water. If aqueous saturated NaCl is used instead of tap water the percentage of mites floating is increased and reaches 95 to 100 %. Moreover, by using this method for extracting house-dust mites we observe that not only the living mites are floating but also the dead mites and some exuviae, the latter generally float beneath the surface, in the upper half of the salt liquid.

It appears from these observations that the ethanol penetrates not only the body but also to some extent the membranes of the mites. The density of the ethanol-impregnated mites is probably very close to that of the ethanol.

By adding the saturated NaCl (density 1.2) to the ethanol-impregnated mites (density ± 0.86) we obtain the equivalent of density 1.34, which explains the high extractive efficiency of the method.

Another quality in favour of this method is the fact that only very few debris are floating on the surface of the salt solution so that it is easy to count and remove the mites.

Référence

Fain (A.), 1966. — Allergies respiratoires produites par un acarien (*Dermatophagoides pteronyssinus*), vivant dans les poussières des habitations. — Bull. Acad. r. Méd. Belg. **6** : 479-499.

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