

The acarine fauna in dust samples from domestic pantries in southern Brazil

In atopic individuals, bronchial asthma and allergic rhinitis are most often caused by sensitivity to allergens from house-dust mites (Platts-Mills *et al.*, 1992). Although it is the mites in mattresses, pillows, carpets and sofas that are generally blamed for allergies, there are other sites of acarine infestation inside most homes (Guerin, 1994; Muniz *et al.*, 1996). Storage mites of the families Glycyphagidae and Acaridae frequently occur in granaries and smaller grain stores in rural areas of Brazil and other countries (Flechtmann, 1986; Hage-Hamsten *et al.*, 1991; Korsgaard, 1998). They are probably also present in the food-storage areas of many Brazilian homes, although the acarine fauna in such areas has not been well explored. The aim of the present study was to investigate the mites to be found in domestic pantries, in the southern Brazilian city of Campinas (47°04'40"W, 22°53'20"S; 680 m above sea level). Between February 1996 and June 1997, single samples were collected of the dust present in the pantry in each of 52 homes. (For the purposes of this study, a pantry was any kitchen area reserved for the storage of dry foods, including grains, cereals, flours and biscuits.) The collection method was similar to that described by Smith *et al.* (1985). In brief, the

food-storage surface in each pantry was cleaned for 2 min (covering approximately 2 m²) with a 1000-W vacuum cleaner (Electrolux, Guarulhos, Brazil). A piece of fine linen cambric (10 × 10 cm), held over the distal opening of the suction hose with the cleaning nozzle, trapped the aspirated dust. The larger particles in each dust sample were removed by sieving through a 500- μ m-mesh sieve. The fine dust passing through the sieve was weighed and then any mites in it were fixed and mounted in Hoyer's medium (Flechtmann, 1975). The mite larvae, nymphs and adults were then identified, to at least order level, under a light microscope, using the classification proposed by Krantz (1978).

Mites (larvae, nymphs and/or adults) were found in 38 (73%) of the 52 samples. The numbers of such mites in the mite-positive samples varied from 1–76 (with a median of five mites), representing concentrations of 125–9500 mites/g fine dust (with a median of 625 mites/g). Of the 190 mites collected, 141 (74%) belonged to the family Acaridae, with the genus *Tyrophagus* and the species *T. putrescentiae* predominant (see Table). The other mites observed belonged to the order Gamasida (16 mites or 8% of the mites collected), the families Tarsonemidae (13; 7%),

TABLE
Mites of the family Acaridae in dust samples from the pantries of 52 homes in the Brazilian city of Campinas

	No. and (%) of mites in the Acaridae
Larvae	29 (20.6)
<i>Tyrophagus</i> sp. (nymphs)	21 (14.9)
<i>Tyrophagus putrescentiae</i> (adults)	86 (61.0)
<i>Suidasia</i> sp. (nymphs)	1 (0.7)
<i>Suidasia neshitti</i> (adults)	4 (2.8)
All	141 (100)

Pyroglyphidae (five; 3%), Glycyphagidae (five; 3%), Cheyletidae (four; 2%) or Eriophyidae (three; 2%), the order Oribatida (two; 1%), or the family Ameroseiidae (one mite of a *Kleemannia* sp.; 0.5%). Six mite eggs and many pieces of insects, mainly of ants (Formicidae) and lice (Pthiraptera), were also found in the dust samples.

So-called 'storage' mites have frequently been found in samples of house dust from carpets, sofas and mattresses (Wharton, 1976; Van Bronswijk, 1981). Platts-Mills *et al.* (1992) suggested that such mites should therefore be called domestic mites rather than 'storage mites'. The present results indicate that 'storage' mites in the family Acaridae form the bulk of the acarine fauna of pantries in Campinas, and that mites of the families Pyroglyphidae and Glycyphagidae—the principal families found in samples of dust from mattresses and sofas in Brazil and elsewhere (Flechtmann, 1986; Platts-Mills *et al.*, 1992; Oliveira, 1999)—are relatively rare in these storage areas for dry food.

The presence of mite eggs, larvae, nymphs and adults in the pantry-dust samples indicates that the whole life-cycle of the mites is occurring in the pantries. The probable sources of nutrition for the mites are the human food stored in these areas (grains, cereals, flours, biscuits etc) or the insects, fungi or other mites also present. Although no attempt was made to associate mite concentrations with the frequency at which the pantries were cleaned, it is clear that pantries are often heavily infested with mites (and insects). The

residents of Campinas should therefore be encouraged to clean their pantries more often. Broader studies are needed, to determine how so many storage mites develop in pantries and how contamination of human food by mites could be prevented or, at least, reduced.

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