

## SHORT COMMUNICATION

Infestation of Stored Medicinal Plants and Herbal Tea  
by Insects and MitesIRMA KALINOVIC<sup>\*</sup> and VLATKA ROZMAN

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## Abstract

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The infestation of stored medicinal plants and herbal tea with harmful pests was studied. In older, damp and mouldy material seven species of insects and one of mites were determined. Most numerous (75%) were insects of the order Psocoptera: *Lepinotus inquilinus* von Heyden, *L. reticulatus* Enderlein, *Liposcelis corrodens* (Heymons) and *L. bostrichophilus* Badonnel, while other species such as *Oryzaephilus mercator* (Fauvel), *Ptinus clavipes* Panzer and *Ephestia ellutella* (Hübner) were less represented (16%). Only one mite species (Acarina), *Lepidoglyphus destructor* (Schrank), was found.

**Key words:** herbal tea; medicinal herbs; stored pests; infestation

Agriculture in Croatia is a very important part of the country's economy. The largest agricultural region is Eastern Slavonia and the Baranya district. Besides the usual and main farming crops, medicinal plants are grown as well. During 1998, about 23 000 kg of different herbs were stored in storehouses and used in the production of various herbal teas. Under unsuitable storage conditions, pests (insects and mites) can infest the stored herbs and teas. The purpose of the present study was to determine which harmful insects and mites occur in stored medicinal herbs and teas.

## MATERIAL AND METHODS

During 1998 and from four storehouses over 250 samples of medicinal plants such as *Althaea officinalis* – white mallow, *Ocimum basilicum* – basil, *Salvia officinalis* – shop-sage, *Matricaria chamomilla* – chamomile flower, *Lavandula officinalis* – lavender, *Melissa officinalis* – balm, *Salvia sclarea* – clary sage, *Calendula officinalis* – common marigold, *Valeriana officinalis* – valerian, *Mentha piperita* – peppermint, *Thymus vulgaris* – garden thyme and *Morus nigra* – black mulberry, and different teas of these herbs were analysed.

Two of the storehouses had simple wooden floors, and the plants were stored in large jute bags or cardboard

boxes, which were placed on wooden beams, or the plants were simply wrapped in linen. The other two storehouses were air-conditioned, with humidity and temperature control.

The samples (each weighing 100 g) were sieved by an automatic apparatus (sieve diameter 0.5–2.5 mm). Insects were identified by using a stereomicroscope according to KORUNIC (1990), with representatives of the order Psocoptera (Liposcelididae) preserved in 70% alcohol, cleared, mounted on slides and identified by microscope, using the keys of GÜNTHER (1974). After preparation, mites were determined by microscope according to ŽDÁRKOVÁ (1967).

Sample humidity was measured in a drying apparatus. The moisture content of stored medicinal plants was 18 to 32%. The leaves of *Morus nigra*, *Melissa officinalis* and *Althaea officinalis* had the highest moisture content (32%).

## RESULTS AND DISCUSSION

Fig. 1. shows the fauna of the investigated samples of medicinal plants and herbal tea. In the 20% or in 50 investigated samples of medicinal plants (*M. nigra*, *S. officinalis*, *A. officinalis*) and in mouldy mixed herbal teas, seven species of insects and one species of mite were found. Most numerous were insects of the order Psocoptera,



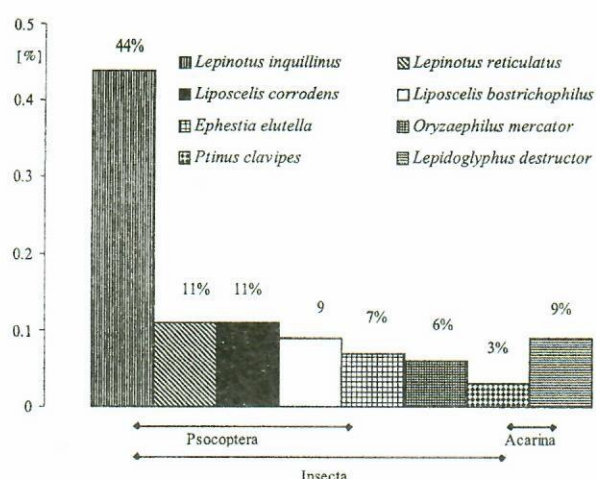


Fig. 1. Fauna of stored medicinal plants and herbal teas

i.e., *Lepinotus inquilinus* (44%), *L. reticulatus* (11%), *Liposcelis corrodens* (11%), *L. bostrichophila* (9%). Other species of insects, such as *Ephestia elutella* (7%), *Oryzaephilus mercator* (6%), *Ptinus clavipes* (3%) were less frequent. Mites (Acarina), species *Lepidoglyphus destructor*, were found in only 9% of the samples. The most frequent insects were psocids (75%), in particular *L. inquilinus* in samples of the leaves of *Morus nigra*. All pests were found in older, damp (27–32%) and mouldy medicinal plants and teas. Psocids are mycophagous insects and they feed on microorganisms such as fungi and bacteria (KALINOVIC *et al.* 1978).

According to other investigations (GÜNTHER 1974; LIENHARD 1998) the detected species of the order *Psocoptera* are very often inhabitants of older and damp medicinal plants, the latter condition being caused by high relative humidity of the air (70–80%) and a high content of different microorganisms. In the studies by BOLLOW (1958) and KORUNIC (1990), insects such as *Ephestia elutella*, *Oryzaephilus mercator*, *Ptinus clavipes* had been found in medicinal plants and some medicinal teas (*Melissa officinalis*, *Valeriana officinalis*).

These are the first records about pests in stored medicinal herbs in our country, and the studies will be continued.

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## Souhrn

KALINOVIC I., ROZMAN V. (2000): Zamoření skladovaných léčivých rostlin a čajů hmyzími škůdci a roztoči. Plant Protect. Sci., 36: 21–22.

Sledovali jsme zamoření skladovaných léčivých rostlin a čaje škůdci. U staršího navlhělého materiálu napadeného plísněmi bylo nalezeno sedm druhů hmyzích škůdců a jeden škodlivý roztoč. Nejpočetněji (75 %) byly zastoupeny pisivky, řád Psocoptera: *Lepinotus inquilinus* von Hayden, *Lepinotus reticulatus* Enderlein, *Liposcelis corrodens* (Heymons) a *Liposcelis bostrichophilus* Badonell, dále v menší míře byl zastoupen *Oryzaephilus mercator* (Fauvel), vrtavec *Ptinus clavipes* Pancer a zavíječ *Ephestia elutella* (Hübner). Pouze jediný zástupce byl ze skladištních roztočů *Lepidoglyphus destructor* (Schrank).

**Klíčová slova:** čaje; léčivé rostliny; skladištní škůdci; zamoření

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