

FIRST REPORT ON THE DEVELOPMENT OF MONIEZIA EXPANSA IN JUVENILE STAGES OF ORIBATID MITES

Since the discovery of the life-cycle of *Moniezia expansa* by Stunkard (Science 6: 312, 1937) many species of oribatid mites have been reported as vectors of anoplocephaline cestodes in different countries. The reports have been based either upon the experimental infection of adult oribatid mites in the laboratory or upon detecting the cysticercoids in the natural population of adult mites in pasturelands. However, there is no reference in the literature as whether the nymphal stages of oribatid mites are capable of being infected by tapeworms and whether the tapeworms in their body cavity survive the moultings undergone by juvenile oribatids.

The population of oribatid mites collected from ungrazed land consisting of adult and juvenile stages of different species were exposed to the same concentration of *Moniezia expansa* infection (150 eggs) for 5 days. The adults and juveniles among the living mites were then separated and maintained separately. Duplicate sets of mites were thus composed and one set was maintained at 28 °C and 85 % RH and the other at room temperature (18–22 °C) and 85 % RH. The former set was terminated at the end of 60 days and the latter at the end of 100 days when all the surviving mites were dissected. During this period all juveniles of *Scheloribates* sp. and most juveniles of *Platynothrus*

sp. had completed their moults and had become adults.

The results clearly show that the juveniles of *Scheloribates laevigatus*, *Scheloribates latipes* and *Platynothrus peltifer* become infected by feeding upon the eggs of *M. expansa* in the same way as the adult stages of the mites. The tapeworm larvae in the body cavity of the juveniles survive the moults until the adult stage of the mite. In *Platynothrus peltifer*, the life cycle takes a long period. Cysticercoids are seen in the nymphal stages also.

The percentage and the intensity (number of cysticercoids per mite) of infection in the mites exposed during their juvenile and adult stages is given in the table. This indicates that by these two criteria, the development of tapeworm in the two groups is similar.

This is the first report showing that juvenile stages of oribatids get the infection of *M. expansa* and that the larval stages of the tapeworm survive the moults in the body cavity of juvenile oribatids. This finding is significant in the epidemiology of monieziasis, since juveniles of oribatids occur abundantly on pastures during prepeak seasons of oribatid mite population.

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Table 1. Development of *M. expansa* in juvenile stages of oribatids compared to that in adult mites

Nº	Name of the mite	Temp. 28 °C and RH 85 %						Room temp. (18–22 °C) and RH 85 %					
		Infected as (adults)			Infected as (juveniles)			Infected as (adults)			Infected as (juveniles)		
		Nº dissected	Nº positive	Percentage infection	Nº dissected	Nº positive	Percentage infected	Cysticercoid per mite	Nº dissected	Nº positive	Percentage infected	Cysticercoid per mite	Cysticercoid per mite
1	<i>Scheloribates laevigatus</i>	3	2	66.6	1.5	5	3	60	1.3	10	Nil	—	—
2	<i>Scheloribates latipes</i>	6	5	83.3	2.7	7	5	71.4	1.8	18	Nil	—	—
3	<i>Platynothrus peltifer</i> (Adults)	228	Nil	—	—	54	1	1.8	1	—	—	—	—
4	<i>Platynothrus peltifer</i> (Nymphal stages)	—	—	—	—	22	6	27.2	1.8	—	—	—	—