DURATION OF DEVELOPMENT AND LONGEVITY OF *RAILLIETIA AURIS* (LEIDY) AND *R. FLECHTMANNI* FACCINI, LEITE AND COSTA (ACARI: GAMASIDA).

R. S. DOS SANTOS[1] & J. L. H. FACCINI[2]

(1) Fundação Pinhalense de Ensino, Faculdade de Medicina Veterinária, E.S. Pinhal, 13990-000, SP, Brasil; (2) Depto. Parasitologia Animal, UFRRJ, Km 47 da antiga Rio-S. Paulo, 23851-970, Seropédica, RJ. Brasil.

SUMMARY: *In vitro* reared *Raillietia auris* (Leidy) and *R. flechtmanni* Faccini, Leite and Costa completed their development in 78.3 ± 7.1 hours (males) and 68.7 ± 6.2 hours (females) and 89.4 ± 11.3 hours (males) and 74.0 ± 9.3 hours (females), respectively. Significant difference ($P < 0.05$) in the nymphal period accounted for the longer periods of males in comparison with females in both species and between species. Longevity of teneral adults, measured in days, were 20.5 ± 7.0 and 21.3 ± 7.3 for males and 21.1± 4.6 and 22.4 ± 7.0 for females of *R. auris* and *R.flechtmanni*, respectively ($P > 0.05$).

KEY WORDS: *R. auris*, *R. flechtmanni*, Acari ,*in vitro* life cycle.

INTRODUCTION

The first attempt to clarify the life cycle of the ear mites of the genus *Raillietia* Trouessart was carried out by FONSECA & FACCINI (1985). Data obtained by those authors were attributed to *R. auris*, the species of *Raillietia* known to be associated with the ear canals of cattle at that time. However, the recent description of a second species, *R. flechtmanni* by FACCINI *et alii* (1992), which also parasitizes the ear canals of cattle in Brazil, prompted the re-evaluation of data of the FONSECA & FACCINI paper.

MATERIALS AND METHODS

Females and larvae of the ear mites for this study were collected from the ear canals of cattle slaughtered at a commercial abattoir in the State of Rio de Janeiro, Southeastern Brazil. All mites were collected just after the death of the hosts by flushing their ear canals with 50 to 100 ml of water according to LEITE *et alii* (1989). All phases of the experiment were conducted at 30 + 1°C and 80-90% RH in a dark environment without food (FONSECA and FACCINI, 1985). Duration of larval and nymphal periods were compared between species and sexes of each species by using the student t-test with 5% of probability.

For the developmental studies, one female mite was introduced into a 3 ml glass vial with the aid of a hand lens and a fine paint brush. Vials were then plugged with hydrophilic cotton and moistened with water at 12-hours intervals. First generation newly emerged adults were mounted with their female parents in the same slide, in Hoyer's medium, sexed and identified to species with aid of a Wild M-20 phase contrast microscope. Nymphs were not identified to proto- or deutonymph, although those instars were present in both species. Observations were carried out on 21 males and 29 females of *R. auris* and 20 males and 30 females of *R. flechtmanni*. For the longevity studies, groups of five, field-collected larvae were introduced into 3 ml glass vials with aid of a hand lens and a fine paint brush and handled as in the developmental studies. Newly emerged teneral adults were individually transferred to 3 ml glass vials, observed until death at 12-hours intervals and then mounted in Hoyer's medium for sexing and species identification as in the developmental studies. Observations were carried out on 54 males and 46 females of *R. auris* and on 103 males and 135 females of *R. flechtmanni*.

RESULTS AND DISCUSSION

The duration of larval and nymphal periods and longevity of adults are shown in Table 1. Concerning the duration of

larval stage, there were only significant difference ($P < 0.05$) between those larvae that gave rise to either males or females of *R. flechtmanni*. The longest period of development occurred with larvae which gave rise to males. However, when the durations of the nymphal stage was analyzed, the period of the development of nymphs which gave rise to males was higher in comparison with those that moulted to females in both species. The nymphal stage was also longer in both sexes of *R. flechtmanni* in comparison with *R. auris* ($P < 0.05$).

Table 1 - Duration in hours of the *in vitro* development of immature stages which developed to either male or female and longevity in days of adults of *Raillietia auris* and *R. flechtmanni* at 30 ± 1°C and 80-90% RH in darkness without food.

Species	Male			Female		
	N	x (SD)	Range	N	x (SD)	Range
Larvae						
R. auris	21	26.9(5.2)Aa	24-36	29	24.4(2.2)aA	24-36
R. flechtmanni	20	28.8(6.0)aA	24-36	30	25.6(4.2)bA	24-36
Nymphs						
R. auris	21	51.4(5.6)aA	48-60	29	43.5(5.9)bA	36-48
R.flechtmanni	20	61.2(8.6)aB	48-72	30	48.4(8.0)bB	36-72
Combined immature stages						
R. auris	21	78.3(7.1)	72-96	29	68.7(6.2)	60-84
R.flechtmanni	20	89.4(11.3)	72-108	30	74.0(9.3)	60-96
Longevity						
R.auris	54	20.5(7.0)aA	2-31	46	21.1(4.6)aA	10-36
R.flechtmanni	103	21.3(7.3)aA	2-36	135	22.4(7.0) aA	3-37

Small letters for comparison between sexes of same species.
Capital letters for comparison between species. Same letters (P>0.05).

There were no significant differences ($P > 0.05$) between sexes of both species and between species for the longevity of adults.

Results of this experiment showed that, under the conditions which it was conducted, the development of *R. auris* and *R. flechtmanni* were similar, although a significant difference was noted in the nymphal period. This probably accounted for the slightly longer post embryonic development of the latter species.

In this experiments field - collected females gave birth to a fully developed larva encased in a translucid thin membrane or an egg. The development only progressed with fully developed larva. This reproductive behavior has also been reported by INADA *et alii* (1993) and clearly shows that species of the genus *Raillietia* are ovoviviparous. Ovoviviparous and viviparous species appear to be common among *Dermanyssoidea* associated with mammals (RADOVSKY, 1994). From epidemiological point of view, it could increase the number of generations/ year, thus improving the probability of transmission.

SUMÁRIO

Raillietia auris (Leidy) e *R. flechtmanni* Faccini, Leite e Costa completaram seu desenvolvimento *in vitro* em 78,3 ± 7,1 horas (machos) e 68,7 ± 6,2 horas (fêmeas) e 89,4 + 11,3 horas (machos) e 74,0 ± 9,3 horas (fêmeas), respectivamente. Diferença estatisticamente significativa ($P < 0,05$) no período ninfal resultou em um período maior no ciclo dos machos do que nas fêmeas em ambas as espécies e interespécies. A longevidade dos adultos jovens, medida em dias, foi 20,5 + 7,0 e 21,3 ± 7,3 para os machos e 21,1 ± 4,6 e 22,4 ± 7,0 para fêmeas de *R.auris* e *R. flechtmanni*, respectivamente ($P > 0,05$).

PALAVRAS-CHAVE: *R. auris, R. flechtmanni*, Acari, desenvolvimento,*in vitro*.

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