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Reproductive Parameters of *Lonomia obliqua* Walker, 1855 (Lepidoptera: Saturniidae) in Laboratory

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ABSTRACT

Lonomia obliqua is an insect that has urticant spines in the larval stage. This species may cause death as a result of haemorrhages caused by a toxin released from the caterpillar's spines onto the skin of the victim. Since 1989 when this species was identified in Rio Grande do Sul, Brazil, many accidents have happened. The aim of this study was to verify the oviposition, fecundity, fertility, viability of eggs and incubation period of the species. Adults were left in a moth's cage to mate and lay eggs. Thirteen couples were observed daily, and the number of eggs and the caterpillars emerged were recorded. The results showed a mean of 2.8 (± 1.3) ovipositions, a mean fecundity of 135.3 (± 54.4) eggs/female, a mean fertility of 111.9 (± 55.4) eggs/female, a mean egg viability of 80.9 (± 20.97) % and a mean incubation period of 31.8 (± 5.8) days.

Key words: *Lonomia obliqua*, urticant caterpillar, public health, fecundity, fertility

INTRODUCTION

Lonomia obliqua is an insect which has urticant spines in the larval stage with a toxin of haemorrhagic effects in human beings. Since 1989 these larvae appeared in a higher frequency and have been responsible for hundreds of accidents in the Southern Region of Brazil, including various fatalities registered (Duarte et al.,1990; Lorini, 1993). Although the 26 species of the genus *Lonomia* overspread along the American Continent (Lemaire, 1972) only *L. obliqua* and *L. achelous* are reported to provoke haemorrhagic effects in humans beings (Arocha-Pinãngo and Layrisse, 1969; Lorini 1997; Lorini, 1999). The main symptoms in human beings' body from caterpillar's contact are deep pain in the muscles, headache, bleeding, acute renal failure, haemorrhagic disorder and death (Abella et al., 1998; Duarte et al.,1990; Burdmann et al. 1996). The poison from caterpillar spines of *L. obliqua* is linked to blood coagulation time interfering in the calcium activity, suggesting alteration in some coagulation factors (Kelen et al., 1995; Donato et al., 1998). With the aim of improving the knowledge on the biology of this species, reproductive parameters as number of ovipositions, fecundity, fertility, eggs viability and incubation period were investigated under laboratory conditions.

MATERIAL AND METHODS

The caterpillars were collected in the field on plants of *Platanus acerifolia*, in the boroughs of Santa Cruz do Sul, Erechim, Guaporé, Passo Fundo, Não-Me-Toque, São Jorge, Farroupilha

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and Vila Lângaro, in Rio Grande do Sul, and Concórdia, in Santa Catarina, and maintained in the Laboratory of Entomology of the Science and Biological Institute of University of Passo Fundo. The caterpillars were reared in the leaves of *Platanus acerifolia* at mean temperature of 18.6ºC (ranging from 13ºC to 24ºC), mean relative humidity of 80.6% (ranging from 64 % to 92 %), and photophase of 12 hours. The pupae and adults were reared following the methodology described by Lorini (1999). After emergence, the adults were sorted by sex according to the phenotipic characteristics (Lorini, 1999). Thirteen couples were reared in a wood cage with a nylon screen 90 x 40 x 90 cm. The number of ovipositions per female, the fecundity and the fertility of eggs were recorded daily. The mean viability and the mean incubation period of eggs with the respective standard deviation were calculated.

RESULTS AND DISCUSSION

The mean number of ovipositions was 2.8 (± 1.3), the mean fecundity was 135.3 (± 54.4) eggs per female, the mean fertility was 111.9 (± 55.4) eggs per female, the mean egg viability was 80.9 % (± 21.0) and the mean period of incubation was 31.8 days (± 5.8) (Table 1). D'antonio (1983) studyind the biology of *L. circumstans* found 17.1 days of incubation period but at laboratory conditions of 22ºC and 60% of relative humidity. The biological aspects of *L. obliqua* are comparable to other species of Saturniidae, which have similar biology (Borges 1985 and Borges et al. 1986). These authors studying the biology of *Dirphia araucariae* (Lepidoptera: Saturniidae) found 4.7 ovipositions per female, fecundity of 239.2 eggs per female, fertility of 110.1 eggs per female, the maximum egg viability of 57.3 % and 26.2 days for the incubation period at 25ºC. Santos et al. (1996) working with another species of Saturniidae, *Hylesia nanus*, found only 16.2 % of egg viability and 21.8 days of incubation period. Although the caterpillars were collected from the same host in the field and reared at the same laboratory conditions, some biological parameters varied as the number of ovipositions that ranged from 1 to 5 (Table 1). Also the egg viability ranged from 41.2 % to 96.6 % (Table 1). That probably was due the variation in climatic conditions on the boroughs where they were collected and of temperature (13ºC to 24ºC) and relative humidity (64 % to 92 %) in the laboratory where the insects were reared during the experiment.

Table 1 - Reproductive parameters of *Lonomia obliqua* in laboratory as number of ovipositions, fecundity, fertility, egg viability and incubation period (± standard deviation). University of Passo Fundo, Passo Fundo, RS, Brazil, 2000.

Female	Borough of collection	Number of ovipositions	Fecundity (eggs/female)	Fertility (eggs/female)	Eggs viability (%)	Incubation period (days)
1	S.C. do Sul	1	89	79	88.76	36.02 (± 1.4320)
2	Erechim	4	177	171	96.61	35.34 (± 0.5458)
3	Concórdia	1	44	21	47.73	26.86 (± 1.4684)
4	Guaporé	5	183	84	45.90	20.55 (± 0.5467)
5	P. Fundo	1	69	64	92.75	20.27 (± 0.4794)
6	N.M.Toque	3	183	146	79.78	37.94 (± 1.7131)
7	N.M.Toque	4	161	154	95.65	36.92 (± 0.4566)
8	São Jorge	3	78	73	93.58	32.82 (± 1.3159)
9	Farroupilha	4	128	114	89.06	33.32 (± 1.1559)
10	Farroupilha	2	223	202	90.58	33.19 (± 0.7729)
11	Farroupilha	3	102	42	41.17	35.81 (± 1.8377)
12	Farroupilha	3	172	162	94.18	33.76 (± 1.7747)
13	V. Lângaro	2	150	143	95.33	31.00 (± 0.0000)
Mean	-	2.77	135.30	111.92	80.85	31.83
Standard deviation	-	1.30	54.40	55.41	20.97	5.80

RESUMO

O objetivo desse trabalho foi estudar os parâmetros biológicos de oviposição, fecundidade, fertilidade, viabilidade dos ovos e período de incubação de *Lonomia obliqua* Walker, 1855, em laboratório. As lagartas foram coletadas no campo nos municípios de Santa Cruz do Sul, Erechim, Guaporé, Passo Fundo, Não-Me-Toque, São Jorge, Farroupilha e Vila Lângaro, no Rio Grande do Sul, e Concórdia em Santa Catarina. As lagartas foram mantidas em sala de criação, com a leitura diária da temperatura e umidade relativa do ar, até a emergência dos adultos. Após a sexagem, cada casal foi colocado em uma gaiola para acasalamento e postura. Acompanhou-se, diariamente, as posturas das fêmeas e a eclosão das lagartas, determinando-se o número de posturas por fêmea, a fecundidade, a fertilidade, a viabilidade e o período de incubação dos ovos. O número médio de oviposições foi de 2,8 (± 1,3), fecundidade média de 135,30 (± 54,4) ovos por fêmea, fertilidade média de 111,9 (± 55,4) ovos por fêmea. A viabilidade média dos ovos foi de 80,9 (± 21,0) % e obteve-se um período médio de incubação de 31,8 (± 5,8) dias.

REFERENCES

Abella, H. B.; Torres, J. B. and Marques, M. G. B. et al. (1998), Manual de diagnóstico e tratamento de acidentes por *Lonomia*. Porto Alegre : Secretaria da Saúde e do Meio Ambiente. 19 pp.

Arocha-Piñango, C. L. and Layrisse, M. (1969), Fibrinolysis produced by contact with a caterpillar. *The Lancet*, 3-7.

Borges, J. D. (1985)., Biologia de *Dirphia araucariae*, em laboratório. *Pesquisa Agropecuária Brasileira*, **20**, 155-158.

Borges, J. D.; Carneiro, M. F. and Almeida, A. A. (1986), Dados sobre as pupas e comportamento dos adultos de *Dirphia araucariae*. *Pesquisa Agropecuária Brasileira*, **21**, 467-471.

Burdmann, E. A.; Antunes, I.; Saldanha, L. B. and Abdulkader, C. M. R. (1996), Severe acute renal failure induced by the venom of *Lonomia* caterpillars, *Clinical Nefrology*, **46**, 337-339.

D'Antonio, A. M. (1983), Biologia, nutrição quantitativa e danos de *Lonomia circumstans* (Walker, 1855) (Lepidoptera, Attacidae) em cafeeiro. Doutorado (Tese), Universidade de São Paulo, Piracicaba, Brasil.

Duarte, A. C.; Caovilla, J; Lorini, I. ; Lorini, D.; Mantovani, G.; Sumida, J.; Manfre, P. C.; Silveira, R. C. and Moura, S. P. (1990), Insuficiência renal aguda por acidentes com lagartas. *Jornal Brasileiro de Nefrologia*, **12**, 184-187.

Donato, J. L.; Moreno, R. A.; Hyslop, S.; Duarte, A. C.; Antunes, E.; Le Bonniec, B. F.; Rendu, F. and Nucci, G. (1998), *Lonomia obliqua* caterpillar spicules trigger human blood coagulation via fator X and prothrombin. *Thromb Haemost*., **79**, 539-542.

Kelen, E. M. A.; Picarelli, Z. P. and Duarte, A. C. (1995), Hemorrhagic syndrome induced by caterpillars of the genus *Lonomia* (Saturniidae, Hemileucinae). *Journal of Toxinology, Toxin Reviews*, **14**, 283-308.

Lemaire, C. (1972), Revision du genre *Lonomia* Walker, [Lep., Attacidae]. *Annales de la Societé Entomologique de France*, **8**, 767-861.

Lorini, I. (1993), Taturana: a lagarta que mata. EMBRAPA-CNPT. 6 pp.

Lorini, L. M. (1997), Aspectos biológicos e morfológicos de *Lonomia obliqua* Walker, 1855 (Lepidoptera: Saturniidae), em laboratório. Mestrado (Dissertação), Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, RS.

Lorini, L. M. (1999), A Taturana: Aspectos biológicos e morfológicos da *Lonomia obliqua*. Passo Fundo : EDIUPF. 67 pp.

Santos, G. P.; Zanuncio, T. V.; Dias, O. S. and Zanuncio, J. C. (1996), Biologia de *Hylesia nanus* (Walker) (Lepidoptera: Attacidae). *Anais* da Sociedade Entomológica do Brasil, **25**, 479-482.

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