**Epidemiology of Fasciola hepatica infection in the Paraiba River Valley, Sao Paulo, Brasil.**

Amato SB, De Rezende HE, Gomes DC, Da Serra Freire NM.

The study revealed that although Lymnaea columella and Stenophysa marmorata were found in the same habitat, only L. columella harbored intramolluscan stages of F. hepatica. The population density of L. columella cyclically decreased between September and February, and increased from March to September. The drought that occurred between June and November 1981 dramatically reduced the number of snails collected. Larger snails were collected in March-July and November-December, while the smaller snails were collected in January-February and August-October, suggesting that there may be two generations of L. columella per year. The highest prevalence levels of infection in L. columella were: first year, June 8.82%, September 9.09% and October 10.52%; second year, March 6.25% and April 6.89%; third year, July 7.69%, August 10.25%, April 17.91% and May 13.91%. Results obtained with tracer sheep showed that the largest numbers of metacercariae were on pasture between June and October, and between March and April, but the infection was present during most of the year.

PMID: 3564331 [PubMed - indexed for MEDLINE]

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**Aspects of the maintenance of the life cycle of Fasciola hepatica in Lymnaea columella in Minas Gerais, Brazil.**

de Souza CP, Magalhaes KG, Passos LK, Pereira dos Santos GC, Ribeiro F, Katz N.

Fascioliasis is a parasitic disease of domestic ruminants that occurs worldwide. The lymnaeid intermediate hosts of Fasciola hepatica include Lymnaea columella, which is widely distributed in Brazil. A colony of L. columella from Belo Horizonte, MG, was reared in our laboratory to be used in studies of the F. hepatica life cycle, the intermediate host-parasite relationship and development of an anti-helminthic vaccine. In the first experiment 1,180 snails were exposed to miracidia of F. hepatica eggs removed from the biliary tracts of cattle from the State of Rio Grande do Sul. In the second and third experiments the snails were exposed to miracidia that had emerged from F. hepatica eggs from Uruguay, maintained in rabbits. The rates of infection in the first, second and third experiments were 0, 42.1 and 0% respectively. Over 15,806 metacercariae were obtained and stored at 4 degrees C. Four rabbits weighing 1.5 kg each were infected with 32-44 metacercariae and two with 200. Three rabbits begin to eliminate eggs of the parasite in the feces from 84 days after infection onwards. The biological cycle of F. hepatica in L. columella and the rabbit was completed within 124 days.

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Rearing of Lymnaea columella (Say, 1817), intermediate host of Fasciola hepatica (Linnaeus, 1758).

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The intermediate host of Fasciola hepatica, Lymnaea columella, collected in Belo Horizonte, Minas Gerais, Brazil, was reared in our laboratory. The aim of the current study was to standardize a rearing and maintenance technique. Two kinds of diet were tested: fresh lettuce (A) and rodent ration + 10% CaCO3 plus fresh lettuce (B). The age for the beginning of oviposition ranged from 27 to 57 days. Ten days after oviposition at 24.7 degrees C, 100% eclosion occurred. The complete life cycle varied from 37 to 67 days. The average numbers of eggs per egg mass were 26.3 and 31.1 with diets (A) and (B), respectively. The lettuce and ration fed snails presented a increased growth although the difference was not statistically significant (p > 0.05). The mortality rate varied from 40 to 64% after 90 days. The maximum longevity was 183 days, 21.5 mm length and 11 mm wide. The methodology to mass breed and maintain these snails was found to be suitable in the laboratory.

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Detection of Lymnaea columella infection by Fasciola hepatica through Multiplex-PCR.

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From complete mitochondrial DNA sequence of Fasciola hepatica available in Genbank, specific primers were designed for a conserved and repetitive region of this trematode. A pair of primers was used for diagnosis of infected Lymnaea columella by F. hepatica during the pre-patent period simultaneously with another pair of primers which amplified the internal transcribed spacer (ITS) region of rDNA from L. columella in a single Multiplex-PCR. The amplification generated a ladder band profile specific for F. hepatica. This profile was observed in positive molluscs at different times of infection, including adult worms from the trematode. The Multiplex-PCR technique showed to be a fast and safe tool for fascioliasis diagnosis, enabling the detection of F. hepatica miracidia in L. columella during the pre-patent period and identification of transmission areas.

PMID: 15322633 [PubMed - in process]
Molluscicidal action of the latex of Euphorbia splendens var. hislopii N.E.B. ("Christ's Crown") (Euphorbiaceae) against Lymnaea columella (Say, 1817) (Pulmonata: Lymnaeidae), intermediate host of Fasciola hepatica Linnaeus, 1758 (Trematode: Fasciolidae): 1- test in laboratory.

de Vasconcellos MC, de Amorim A.

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The latex action of Euphorbia splendens var. hislopii (Christ's Crown) against snails Lymnaea columella, intermediate host of Fasciola hepatica, derived from irrigation ditches of the Station of Pisciculture at Universidade Federal Rural do Rio de Janeiro, was studied in the laboratory. Lab bioassays, using aqueous solutions of the latex, varying between 0.1 and 10 mg/l, have proven molluscicidal activity of the product collected on the same day the tests were performed, during the four seasons of the year, finding the following lethal concentrations (LC90): 1.51 mg/l in the spring; 0.55 mg/l in the summer; 0.74 mg/l in the fall and 0.93 mg/l in winter, after 24 h exposure of the snails, showing significant differences among the seasons of the year (ANOVA test, F = 11.01, G.L.= 3/33, p < 0.05), as well as among the concentrations (ANOVA test, F = 27.38, G.L.= 11/33, p < 0.05). In the summer, mortality reached 100% from concentration at 0.6 mg/l, the same during fall and in winter as of 1 mg/l, while in spring it only reached 100% mortality as of 2 mg/l. Mortality in the controls was low, reaching 5% in the summer and winter and 10% in the fall and spring. None of the samples died. During the assay, with an aqueous solution of the latex at a concentration of 5 mg/l, in order to check the time of duration of the product effect, in the laboratory, it was observed that the molluscicidal activity remained stable up to the 15th day after the beginning of the test with 100% mortality of L. columella, gradually losing its effect until the 23rd day, when we no longer observed animal mortality. In the control group, there was a random daily variation in mortality rate ranging 0-50% after 48 h of observation for 30 days.

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of the snail population present. Twenty-four hours after application of the product, it was verified that 97.4% of free L. columella snails and 100% of snails of the same species captive in cages and used as sentinels at three points equidistant from the application site in the experimental ditch, died. For Biomphalaria tenagophila and Melanoides tuberculata snails, present in the experimental ditch, the mortality was 100%, for the species Pomacea spp. the mortality was 40%. No mortality was verified in the free mollusks, or in the sentinels in the ditch used as control. E. splendens var. hislopii latex is thus an efficient natural molluscicide, which may be used as an alternative control agent against L. columella.

PMID: 14762529 [PubMed - indexed for MEDLINE]