RESEARCH NOTE

Effect of *Biomphalaria straminea* Plasma in the Phagocytosis of *Biomphalaria glabrata* Hemolymph Cells

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Mollusc defensive system that discriminates self from non self molecules, include fixed cells that can trap particles like endothelial cells, reticular and pore-cells, and circulating elements (WPW Van Der Knaap & ES Loker 1990 *Parasitol Today 6*: 175-182). Hemocytes, cells with phagocytic capacity, are determinant elements in the resistance or susceptibility of *Biomphalaria* snails to the trematoda *Schistosoma mansoni* infection (FS Bezerra et al. 1997 *Rev Inst Med Trop S Paulo 39*: 197-201). *Biomphalaria* resistance or susceptibility to *S. mansoni* infection is well defined as genetically determined (JV Santana et al. 1978 *Rev Saúde Públ S Paulo 12*: 67-77). Allograft of producing amebocyte organ from resistant snails to susceptible ones, enhance its resistance suggesting that the phenomenon is dependent on hemocytes activity (JT Sullivan et al. 1995 *J Parasitol 5*: 829-33). On the other hand, inoculation of hemolymph from *B. tenagophila* infected with either *S. mansoni* or with other trematoda furcocercaria, raised significantly the cellular response of susceptible mollusc (SM Reis et al. 1995 *Rev Saúde Públ 29*: 259-264).

Susceptible *B. glabrata* snails hemocytes made phagocytosis more efficient when latex particles were covered with resistant strains plasma. Furthermore, the results from our laboratory showed that *B. straminea*, a highly resistant mollusc to *S. mansoni* infection, is the only parasite host found in many endemic areas of northeast Brazil [FF Amâncio et al. 1989 *Mem Inst Oswaldo Cruz* (Suppl. I) *84*: 253]. Therefore we tried to observe the influence of soluble products from *B. straminea* plasma in the phagocytic capacity of *B. glabrata* hemocytes.

B. glabrata hemocyte monolayer was prepared from hemolymph, collected through cephalo-podal bleeding and incubated at 22°C during 40 min in humid chamber. After washing, to remove non adherent cells, the monolayers were incubated with 10^5 cells of yeast *(Saccharomyces* sp.*)* for 1 hr at 22°C.

The slides were washed to detach non ingested yeast, fixed with methanol and stained with Giemsa. For determination of the phagocytic index, 200 cells per slide were counted.

When necessary, *B. straminea* plasma was previously incubated with the yeast suspension for 1 hr at 22°C. Another procedure was carried out using the plasma previously warmed at 56°C during half an hour (plasma 56). Following this schedule, five groups were done:

Group A: monolayer + fresh *B. straminea* plasma + yeast suspension

Group A 56: monolayer + *B. straminea* plasma 56 + yeast suspension

Group B: monolayer + incubated fresh plasma + yeast suspension

Group B 56: monolayer + incubated plasma 56 + yeast suspension

Group control: monolayer + Hanks + yeast suspension.

Analysis of the results of the Tukey test (Table), led us to conclude that the incubation with *B. straminea* plasma raises significantly the phagocytic capacity of *B. glabrata* hemocyte. Previous incubation of yeast with plasma, does not facilitate the uptake of the yeast, on the contrary, there was a decrease of phagocytosis. The enhacing effect of plasma is temperature dependent, decreasing significantly after half an hour at 56°C.

These results strongly suggest that soluble and termosensible products present in the *B. straminea* plasma, increase the phagocytic capacity of susceptible *B. glabrata* to *Saccharomyces* sp. yeast.

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TABLE

Effect of *Biomphalaria straminea* plasma in the phagocytosis of *B. glabrata* hemocytes

Assay	% phagocytosis
Control group (monolayer + Hanks + yeast)	27.8 ± 2.5
Group A (monolayer + fresh plasma 1hr + yeast)	34.6 ± 3.3[a]
Group A 56 (monolayer + plasma 56 1hr + yeast)	19 ± 1.9
Group B (monolayer + yeast + fresh plasma)	26.6 ± 3.0[a]
Group B 56 (monolayer +yeast + plasma 56)	20.2 ± 3.2

a: significative values by Tukey test.