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Autor: Haralabidis, S.T.

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Faculty of Veterinary Medicine, Aristotelian University, Thessaloniki, Greece

Detection of antibodies against *Candida albicans* in *Giardia lamblia* infected individuals

Short communication

S. TH. HARALABIDIS

The role of the fungus *Candida albicans* in in vitro cultivation (Karpetyan, 1962, cited by Naik et al., 1978) and in vivo growth of the protozoan parasite *Giardia lamblia* is already known (Naik et al., 1978).

The aim of the present study was to investigate from immunological aspect the relationship between both organisms.

Sera from 176 children (1–16 years old) infected with *G. lamblia* (they had cysts of the parasite in their stools) were tested by the assay ELISA (enzyme-linked immunosorbent assay) against the antigens: 1. *C. albicans*, Test Allergen/Pricktestlösung (HAL Allergie GmbH, Düsseldorf, W. Germany) and 2. *G. lamblia* prepared from the cysts of the parasite (Haralabidis, in press). As negative control were used 91 serum samples from healthy children (no fungi or parasites were found in their stool examination).

Preliminary tests using known positive and negative sera, indicated optimum concentration for the antigen of *C. albicans* 12.5 μg protein/ml and for the antigen of *G. lamblia* 29 μg protein/ml, as well as optimum dilution for the serum samples and the conjugate, 1:100 and 1:1600, respectively. The conjugate used in the assay was anti-human IgG conjugated to alkaline phosphatase by the method of Engvall and Perlmann (1972). The ELISA was performed according to Voller et al. (1976).

The high level of reactivity of the sera tested against both antigens (Table 1) may be due to the asymptomatical presence of the fungus in the jejunum of patients infected with *G. lamblia*. This hypothesis is in agreement with the high frequency of fungi in the jejunum of healthy individuals reported by Cohen et al. (1969) (cited by Naik et al., 1978) and the findings concerning the importance of *C. albicans* for the in vivo growth of *G. lamblia* reported by Naik et al. (1978).

Correspondence: Dr. Stilianos Th. Haralabidis, Aristotelian University, Faculty of Veterinary Medicine, Department of Applied Helminthology and Entomology, Thessaloniki, Greece

Table 1. Comparative results of sera from healthy and infected with *Giardia lamblia* children tested against the antigens *G. lamblia* and *Candida albicans* in the assay ELISA

Antigen	Infected with *G. lamblia* children			Healthy children		
	tested	sera		tested	sera	
		positive	negative		positive	negative
C. albicans ...	176	160 (90.9%)	16 (9.1%)	91	21 (23.1%)	70 (76.9%)
G. lamblia	176	176 (100%)	0	91	3 (3.3%)	88 (96.7%)

As regards the sensitivity of ELISA, it was very high with both antigens used in the present work. Similar results were reported by Hommel et al. (1976) in the serodiagnosis of candidosis by the ELISA as well as by Warren et al. (1977) in the detection of circulating *C. albicans* antigen and by Haralabidis (in press) in the immunodiagnosis of giardiasis by the ELISA.

In conclusion, ELISA is very useful assay in the serodiagnosis of candidosis and giardiasis. However, further studies to elucidate the precise relationship between *C. albicans* and *G. lamblia* in the human jejunum are needed.

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