

# A SURVEY OF 800 BATS FOR ISOLATION OF HISTOPLASMA CAPSULATUM IN IRAN

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**Abstract-** Clinical cases of Histoplasmosis have been reported from many parts of the world principally from the USA and to a lesser extent from central and south America. Sporadic cases are recorded in medical literature from Europe, Africa and Asia. *Histoplasma capsulatum*, the etiologic agent of histoplasmosis is a cosmopolitan geophilic fungus associated with avian and chiroptera. The association of bats with cases of histoplasmosis in man and the isolation of *Histoplasma capsulatum* from organs and feces of naturally infected bats suggest that certain species of chiroptera may play a role in the epidemiology of histoplasmosis. For this purpose during 12 months between 1994 and 1995 a total of 800 bats representing 3 genous include *Myotis*, *Rhinolophus* and *Sherbersi* were examined from 2 caves in the North and West in Iran. The methods were based on direct examination, culture and inoculation to animals and *Histoplasma capsulatum* was not isolated.

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**Key Words:** *Histoplasma capsulatum*, bat, Iran

## INTRODUCTION

Clinical cases of histoplasmosis have been reported from many parts of the world, principally from the USA and to a lesser extent from central and south America (1-4). Sporadic cases are recorded in medical literature from Europe, Africa and Asia.(2-5).

The association of bats with cases of histoplasmosis in man and the isolation of *Histoplasma capsulatum* from organs and feces of naturally infected bats suggest that certain species of chiroptera may play a role in the epidemiology of histoplasmosis (6-8).

yeast form and sabouraud dextrose agar with chloromphenicol in 25°C for mycelial form. Portions of internal organs were preserved in 10 percent formalin for histological examination. In addition to culture, direct examination by KOH and gimsa stain were done. The culture plates were incubated at 25°C and 37°C and periodically examined for three months. One hundred of bats were selected randomly and internal organ tissue suspensions were prepared and inoculated into mice interapritoneally.

All suspecious colonies were examined microscopically and subculture to differential media for further study.

## MATERIALS AND METHODS

During 12 months between 1994 and 1995 a total of 800 bats, representing 3 genous including *Myotis*, *Rhinolophus* and *Sherberis* were examined from 2 caves in the North (Lahidjan) and West (Kermanshah) of Iran. After typing the bats in Iran's Pasture Institute, were later brought to the laboratory of mycology. Autopsies were performed and specimens of lung, liver, kidney, spleen and intestinal contents were inoculated into duplicate plates of sabouraud dextrose agar BH1, SABH1 agar and blood agar in 37°C for

## RESULTS

*H. Capsulatum* was not isolated from these chiroptera species.

## DISCUSSION

This study is the first of its kind in Iran and the results of the present study indicate that naturally occurring *H. capsulatum* contamination is not among chiroptera in the areas of Iran sampled. It has been suggested by other investigators that bats vary among the species in their natural susceptibility to infection with *H. capsulatum* (9). If true this could possibly explain the negative result of infection observed in Iran.

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In the Middle East, the occurrence of *H. capsulatum* has not been documented with any degree of certainty. Based on a review and evaluation of published reports on cases of histoplasmosis in humans and lower animals as well as soil and wild animal studies, there is little concrete evidence that *H. capsulatum* occurs in the Middle East (2,10).

On the other hand some studies on birds and soils were done by Iranian investigators for isolation of *H. capsulatum* in Iran have similar results. In a study of birds (Starlings) in Azarbaigan of Iran by Emami and et al. *H. capsulatum* was not isolated. Asgari et al. attempted to isolate *H. capsulatum* and other pathogenic fungi from 14 soil specimens by the mouse isolation procedure, *H. capsulatum* was not isolated (11). But Adimi has isolated the first *H. capsulatum* from the soil of Karaj in 1987 (12).

The actual importance of chiroptera in the epidemiology of histoplasmosis is unknown (13). In 1965, Campbell suggested that the bat is the source of the infective agent *H. capsulatum* but some evidence chiroptera generally avoid contact with man. Cases of histoplasmosis in man associated with chiroptera have usually occurred in persons entering bat caves and represent only a small percentage of the total reported cases of the disease (2,3,7).

Further cultural survey has failed to show any direct relation between rate of infection in man and bats. Robert et al. found few infected chiroptera in an area where the prevalence of histoplasmin sensitivity among the human population was very high (14,15).

In addition a recent survey in the southeastern USA found a high rate of infection among bats in an area where the prevalence of histoplasmin sensitivity in man was low (13). In addition to this some observations suggest that bats do not play an important role in the epidemiology of histoplasmosis (9).

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