

Treatment of Cutaneous Leishmaniasis in Murine Model by Alcoholic Extract of *Berberis vulgaris*

* Fata A¹, Rakhshandeh H², Berenji F¹, Jalalianfard A²

¹ Dept. of Parasitology & Mycology, Emam Reza Hospital, Mashhad University of Medical Sciences, Iran

² Dept. of Pharmacology, School of Medicine, Mashhad University of Medical Sciences, Iran

(Received 30 May 2006; accepted 4 Oct 2006)

Abstract

In order to evaluate the effect of *Berberis vulgaris* extract on the experimental ulcers of cutaneous leishmaniasis (CL) on Balb/c mice, a study was undertaken over a 12 months period. Forty Balb/c mice were divided into 2 main groups A and B. Each main group in turn was divided into 5 sub groups of 4 mice and each sub group were inoculated subcutaneously by 0.1ml liquid phase culture containing promastigotes of *Leishmania major*. After 2-3 weeks, nodules and ulcers appeared on 37 of 40 inoculated mice. Ethanol extract of the stem and leaves as well as roots of *Berberis vulgaris* in different concentrations, were used topically on CL lesions of 4 sub groups A and B, respectively. Ethanol alone was used on the lesions of control mice. The surface area of lesions were measured before and 1-2 weeks after treatment. Direct Geimsa stained smear prepared 20 days after treatment. The results showed that after 2 weeks, a statistically significant decrease of ulcer size of treated mice observed, while in the control group the lesion growth continued. The examinations showed that using higher concentration of the extract caused more decrease in surface area of CL lesions on day 15 and negative direct smear on day 20. Alcoholic extract of *B. vulgaris* root was more effective than leaves and stem extract. Alcoholic extract of *B vulgaris* might be further used in animal model.

Keywords: *Cutaneous leishmaniasis, Treatment, Berberis vulgaris, Murine model*

Introduction

Cutaneous leishmaniasis (CL) represents a common health problem and standard treatments are often ineffective or yield poor cosmetic results. The classic treatment is with pentavalent antimonials. The disadvantages of the antimonials are their requirement for intramuscular or intravenous injection each day for 20-28 d, their toxicity, and the recent development of resistance in some regions such as India (1).

Traditional treatment of CL is a common habit of natives in many endemic areas including Khorasan Province of Iran (2-3). Natural extract of different plants such as *Euphorbia* spp., *Gossypium herbacium*,

and *Berberis vulgaris* are directly used on skin lesions as well as on the parasite in NNN medium (4). Berberine is an alkaloid found in the extract of some medicinal plants such as *B. vulgaris* (5). In order to evaluate the effect of *B. vulgaris* extract on the experimental ulcers of CL on Balb/ c mice, a study was undertaken over a 12-month period in the Dept. of Parasitology, Emam Reza Medical School, Mashhad, Iran.

Materials and Methods

Forty Balb/c mice divided into 2 main groups A and B. Each main group in turn was divided into 5 sub groups of 4 mice and each sub group were inoculated subcutaneously by 0.1ml liquid phase culture