A comparison between the routine treatment of equine dermatophytosis and treatment with Garlic-Aloe vera gel

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ABSTRACT: Ringworm is an infectious disease of animals caused by different species of keratinophilic fungi. Disease in horses can be ranging from mild to severe lesions. In horses, most dermatophyte lesions are found in areas of contact with saddles or other tack. Treatment is generally topical because systemic therapy is expensive. Herbal medicine has been formulated and used as an integral part of primary health care in some countries. These natural plants involve Garlic and Aloe vera. In this study a total of 10 affected horses in two groups, were subjected under the routine treatment and treatment with Garlic and Aloe vera gel, respectively. Periodic observations of two groups showed the comparable results. Results of 5-day intervals suggested a progressive improvement in both groups. A desirable response to treatment was seen by the 25th day in each method.

Key words: Aloe vera gel; Dermatophytosis; Equine; Garlic; Treatment.

INTRODUCTION

Skin, hair, nail, and subcutaneous tissues in human and animal are subjected to infection by several organisms, mainly fungi named dermatophytes and cause dermatophytoses (Bokhari, 2009). It is a major public and veterinary health problem reported from different parts of the world and causes great economic loss (Shams Ghahtfarokhi et al., 2003). It has been reported that animals housed in close proximity to each other for long periods and the presence of infected debris in buildings account for both the higher incidence and the greater infection rate in winter. Although Trichophyton and Microsporum species are the main causes of ringworm (Radostits et al. 2007), in horses, T. equinum is most commonly involved. Disease in horses can be quite variable, ranging from mild or subclinical disease to severe lesions mimicking pemphigus foliaceus (Stannard and White, 2002). In horses, most dermatophyte lesions are found in areas of contact with saddles or other tack. T. equinum lesions are usually pruritic, with exudative lesions and areas of hairless, thickened skin. M. equinum lesions are usually less severe and consist of small scaly areas with brittle hairs (OIE, 2005). Systemic treatments recommended for use in farm animals include the injection of sodium iodide as a 10% solution repeated on several occasions, and, if the high cost of the treatment can be overlooked, the oral administration of griseofulvin (Radostits et al. 2007). Treatment is generally topical because systemic therapy is expensive and of unproven efficacy. Whole-body rinses and individual lesions treated with clotrimazole or miconazole preparations (Kahn and Line, 2005). There are some evidences that garlic and aloe vera can be used as anti-dermatophytic agents (Adejmo and Bamidele, 2009). Garlic (Allium sativum) is an intriguing herb with a long history of medicinal use for a variety of diseases including ringworm infections (Venugopal and Venugopal, 1995). The Aloe vera gel has been found to promote wound healing due to the presence of some components like anthraquinones and hormones, which posses antibacterial, antifungal and antiviral activities. Most of the constituents are found in the gel and not in the leaf; hence the gel is likely to be more active than the leaf. The fact that Aloe vera extracts on microorganisms gave credence to the popular use of both Aloe vera gel and leaf (Adejmo and Bamidele, 2009). This study was designed to compare the routine treatment of dermatophytosis with garlic and aloe vera gel treatment in horses.
MATERIALS AND METHODS

Animals
A total of 10 horses in a horse-riding club in Isfahan were used in the present study. The club contained about 100 animals of different ages. There was a history of skin lesions on mentioned horses shortly after introducing a non-quarantined horse with a history of cutaneous lesions. The horses were cross-bred in a good nutritional status and of 2-12 years of age.

Clinical examinations
The skin of all animals was examined and a complete clinical examination of all affected animals was done. Evaluation of the general state of the animals, temperature, pulse, respiratory rate and appetite were recorded. The shape, size, position, distribution and time of the appearance of skin lesions as well as the age of the animals were also recorded.

Sampling
The surface of the affected area was first rubbed with a cotton swab impregnated with 70% ethyl alcohol to remove surface adhering organisms. Skin scales were collected by scraping of the margin of the lesion using a sterile scalpel blade into sterile petri dish. Hairs were collected by removing dull broken hairs from the margin of the lesion. Each sample collected was divided into two portions: One portion was used for direct microscopic examination with 10% KOH/ DMSO. The second portion was cultured on sabouraud dextrose agar, incubated at 28 °C for up to 3 weeks and checked daily for the colony formation. To identify the pathogenic fungi, macroscopic and microscopic examinations were performed and time of appearance of the growth, colony morphology, and also color, shape, size and colony reverse side morphology was noticed. Microscopic examination for positive fungi cultures was done using the Lactophenol cotton blue wet mount method (Halley and Standard, 1973).

Treatment method
All affected horses were kept in the same conditions such as light, ventilation, bedding and stable disinfection. They were divided into two groups and each group was subjected under different treatments. Horses in the first group were administered griseofulvin orally at the daily dose rate of 250mg/kg for seven days as well antifungal lotions were scrubbed topically, two times a day, for three weeks. Horses in the second group were given five pills of garlic daily for 25 days. Aloe vera gel was rubbed on the lesions, as well. Results were recorded in five-day intervals.

RESULTS
Fungal elements could be seen in KOH preparation of affected horses (Figure 1). Fungi Culture was positive in all cases. Fungal species were identified on the basis of cultural characteristics, pigment production and microscopic examination in lactophenol cotton blue preparation. Although some species of dermatophytes were isolated, the predominant pathogen was T. equinum.

Figure 1. Trichphyton equinum isolated from skin samples of affected horses

Periodic observations of two groups showed the comparable results. Results of five-day intervals suggested a progressive improvement in both groups. In horses with signs of dermatophytosis (Figures 2,3), fungal spots on the fifth, tenth, Fifteenth and twentieth day gradually become smaller and itching went away (Figures 4,5). A desirable response to treatment was seen by the 25th day in each method. Unwillingness to eat, lethargy and depression were improved, so that at the end of 25th day, all of the horses tended to feed, wounds become very small or disappeared, and only there was a mild alopecia in some areas.
Figure 2. Affected horse before treatment

Figure 3. Affected horse before treatment

Figure 4. Affected horse on the 25th day of treatment

Figure 5. Affected horse on the 25th day of treatment
DISCUSSION

Animals often have self-limiting dermatophytosis that resolve within a few months, but treatment can speed recovery, decrease the spread of lesions on the animal, and decrease the risk of transmission. Treatment may include topical antifungal creams or shampoos, and/or systemic antifungal drugs (OIE, 2005). The choice of proper treatment for dermatophytosis is determined by the site and extent of the infection and the species involved, as well as by the efficacy, safety profile and pharmacokinetics of the available drugs.

Development of more effective and less toxic antifungal agents is required for the treatment of dermatophytosis. Different treatments have been recommended to control dermatophytes. In general, pharmacological treatment options include antifungal agents, but recently the use of some natural plant products has been emerged to inhibit the causative organisms. A number of reports are available in vitro and in vivo efficacy of plant extract against plant, animal and human pathogens causing fungal infections (Bokhari, 2009). Shams et al. (2003) has showed that Trichophyton mentagrophytes growth was significantly inhibited by garlic extract in vitro. Adejmo et al. (2009) have reported satisfactory results of applying Aloe vera extract for controlling the dermatophyte-causing agents (Trichophyton mentagrophytes) in vitro. Also, Antickchi et al. (2009) reported acceptable results in treating dermatophytosis with Aloe vera in calves. The results of this survey showed that Aloe vera extract and garlic can be used as potential candidates for preparation of anti-dermatophytic drug formulations.

CONCLUSION

The use of medicinal plants in the treatment of dermatomycoses will help to reduce the dependence on the use of microbial or chemically synthesized antimicrobials and thus overcome the problem of the emergence of fungi being resistant to antifungal chemicals on various etiological agents of dermatophyte infections (Adejmo and Bamidele, 2009).

The ultimate conclusion of this study supports the traditional medicine use of different plant extracts in treating different infections caused by pathogenic fungi, either by using a single or combined extracts. It also suggests that a great attention should be paid to medicinal plants which are found to have plenty of pharmacological properties that could be sufficiently better when considering a natural food and feed additives to improve human and animal health.

REFERENCES