Iran J Public Health, Vol. 44, No.11, Nov 2015, pp.1555-1556

Letter to the Editor

Herbal Therapy and Treatment of Worm Infections, Emphasizing *Taenia solium*

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(Received 15 Aug 2015; accepted 09 Sep 2015)

Dear Editor-in-Chief

Helminth infections are still a threat to public health for people resident in the tropics and underdeveloped countries. These infections are usually ignored and some of them, such as neurocysticercosis are dangerous and have serious side effects**.** The use of drugs on one hand assists to cure the diseases, but on the other hand, may cause the parasite to be resistant to treatment. These drugs may also be expensive or unavailable. Exploiting traditional medicine might be considered as a complementary way to treat the helminthic diseases because these resources are easy to access and have fewer side effects.

Cysticercosis is a zoonotic disease infecting animals and humans transferred from the larval stage of *Taenia solium*. Currently, neurocysticercosis, resulted from *T. solium* is one the most common parasitic diseases of human in developing or industrialized countries with high migration index of people living in endemic areas (1, 2). Although *T. solium* as a helminthic infection is of benign prognosis, but mortality resulted from neurocysticercosis has been reported in ligature (1-3). Its perilous consequences in countries such as Latin America and sub-Saharan Africa and Oceania are seen (1, 3).

Until 1978, the only treatment for this disease was surgery. Praziquantel was the first drug to be effective on parasitic diseases especially trematodes and cestodes. In Mexico, it is treated using albendazole or praziquantel (4). Numerous studies conducted in America showed less effectiveness on drug therapy that may be due to differences with Mexico because of heterogeneous groups of patients of the study(5). These drugs have side effects on the body (4).

In the past, herbal remedies used to combat worms. Many of them are still used on the treatment of parasitic diseases. India and China have vast resources of medicinal plants. The use of herbal medicines for the treatment of diseases in India traces back to 3500 years BC (6). Many plants in terms of the impact on the worms have been tested and approve already and most of them originate from northern India (6). A 43-yr-old Tibetan woman carrying *T. solium* was treated in 2009 using extracts of pumpkin seeds (7).

In the past, extracts and oils of pants were tested mostly on earthworm *Pheritima posthuma* as an appropriate model, e.g., effect of plant oil *Cymbopogon nardus* (Gramineae) on earthworm was satisfaction (6). Later studies showed root oil *Hedychium coronarium* (Zingiberaceae) and *H. spicatum* (Zingiberaceae) had better effects than piperazine phosphate against tapeworms (6). Oil of *Gardenia lucida* (Rubiaceae), *Cyperusrotundus* (Cyperaceae), *Inula racemosa* (Compositae), *Psitacia integrrima* (Anacardiaceae), *Litsea chinensis* (Lauraceae) and *Randia dumetorum* (Rubiaceae) also showed good effects on tapeworms (6). In an-

other study, oil plants, such as *Artemisia pallens* (Compositae), *Eupatorium triplinerve* (Compositae), *Artabotrys odoratissimus* (Annonanceae), *Capillipedium foetidum* (Poaceae) and the grass of *Cymbopogon martini* (Poaceae) showed a strong impact on *Ascaris* and *T. solium* (8). In 1974, thirty-two patients with taeniasis were treated successfully with mixture of boiled areca nuts and pumpkin seeds in Taiwan (9). Outcome of wormicidal plant extracts of *Melia azedarach Linn. (*Meliaceae*)* was better than piperazine phosphate on treatment of *T. solium* (10).

Eventually, medicinal herbs can be used and tested to cure many infectious diseases, including helminthic diseases. It is of significant note because herbal medicine might be of fewer side effects than chemotherapy as has been reported in literature more or less.

Acknowledgements

The authors declare that there is no conflict of interests.

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