

Infectious Diseases 2015 : In vitro evaluation of anti-helminthic activity of *Mentha piperita* extracts against *Strongyloides venezuelensis* - Maria Fernanda Chiari - Universidade Federal de Sao Carlos

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Disseminated strongyloidiasis is rare among the population of immunocompetent, but very important in immunocompromised individuals, particularly those co-infected with HIV. This form of the disease is due to autoinfection capacity of *Strongyloides stercoralis* and characterized by the presence of larvae in multiple organs. The search for new compounds that have antiparasitic activity and less side effects is of great interest for the treatment of immunocompromised individuals. The search for new drugs has an important ally in medicine for centuries, the use of medicinal plants. And in our group we have shown beneficial effects of *Mentha piperita* L. in the treatment of experimental schistosomiasis. Thus, we evaluated the Menthol and menthone compound in the viability of in vitro parthenogenetic females *Strongyloides venezuelensis*. After 12 days of infection of rats (Wistar -1500 larvae per animal), 15 cm of their small intestine were removed and the females were recovered. Two females per well containing 2 mL medium and compounds and Menthol and / or menthone (100 µg/ml, 50 µg/ml, 25 µg/ml and 12.5 µg/ml) in triplicate. We utilized Ivermectin (the same doses to compounds) to positive control and DMSO 99.9% to negative control. The tested compounds showed 100% efficiency for induction of in vitro female death, suggesting that these bio compounds have potential to be assessed for their effectiveness in reducing the parasitic load in vivo tests. And they can contribute to the search for new compounds in the control of parasitic diseases caused by nematodes. Helminthic infestations are now being recognized as an explanation for chronic unhealthiness and sluggishness amongst the youngsters. Quite half the population within the world suffers from worm infestations of 1 or the opposite. Helminthes also affect livestock and livestock causing considerable economic loss. Traditional system of drugs reports the efficacy of several natural products eliminating helminthes. Considering this *Nauclea orientalis* has been evaluated for its anthelmintic activities. *Nauclea orientalis* may be a large tree

distributed in India and is indigenous to north Australia. The concoction from seed pulp is employed to cure cough, cold, stomach pain, vomiting and diarrhea. Literature review showed the presence of indole alkaloidal glycosides and nine angustine-type alkaloids within the ammoniacal extracts of leaf. Three of them are 10-hydroxyangustine and therefore the two diastereoisomeric 3,14-dihydroangustolines. These compounds were found to exhibit In vitro antiproliferative activity against the human breast carcinoma MCF-7 and murine leukemic cell lines. The anthelmintic activity of the plant extract has not been reported within the literature. Within the present study, anthelmintic potential of various extracts of leaf are evaluated. The leaves of *N. orientalis* were collected from Lam, Guntur during June/July 2007. The plant was identified and authenticated by the Department of Botony, Acharya Nagarjuna University, Nagarjuna Nagar. The leaves were cleaned; shade dried, coarsely powdered and sieved using # 40. The powder was extracted during a Soxhlet apparatus using petroleum ether, chloroform, ethanol and water as solvents. Extracts were subjected to Rotary vacuum evaporation. Various standard phytochemical tests were performed on the extracts to spot the active chemical constituents. The anthelmintic activity was evaluated on adult Indian earthworms, *Pheritima postuma* (Annelida), thanks to its anatomical and physiological resemblance with intestinal round worm parasites of citizenry. The worms were collected and identified at Vermi compost Division, Regional Agricultural Research Institute, Lam, Guntur. The anthelmintic method was carried as per the tactic of Pal et al., with minor modifications. Sixteen groups each containing six earthworms of roughly equal size were released into 10 ml of desired formulation. Each group was treated with, albendazole, chloroform extract, ester extract, ethanol extract and aqueous extract (40, 60 and 80 mg/ml) in normal saline with 5% DMF and in vehicle alone acting as control. Time for paralysis was noted when no movement might be observed with a small

pin prick method. Time for death of individual earth worms was recorded when the worms showed no movement either by vigorous shaking or by dipping in warm water. Human kind has been exposed to infection by microorganism since before the dawn of recorded history. Diseases caused by intestinal parasites (helminths) pose an excellent threat to health and contribute to the prevalence of malnutrition, anaemia and eosinophilia. All cultures have folk medicine traditions that include the utilization of plants and plant products. Traditional medicinal plants are linked to traditional culture with traditional healers and herbalists acting as important stakeholders. The plants are known to be a rich source of botanical and therefore the medicinal. It is estimated that two thirds of the planet population still believe traditional medical remedies, mainly plants, due to limited availability and affordability of pharmaceutical medicines. Today quite 70% of the people in Africa ask traditional healers concerning health issues. The World Health Organization (WHO) encourages the inclusion of herbal medicines of proven safety and efficacy within the health care program of developing countries due to the good potential they hold in combating various diseases. Peppermint possesses a fresh sharp menthol odor and a pungent taste followed by a cooling sensation. It also features a sort of therapeutic properties and is employed in aromatherapy, bath preparations, mouthwashes, toothpastes, and topical preparations. Peppermint may be a hybrid mint, a cross between watermint and spearmint. Indigenous to Europe and

therefore the Middle East, the plant is now widely spread and cultivated in many regions of the planet. It is occasionally found within the wild with its parent species. In vitro (meaning: within the glass) studies are performed with microorganisms, cells, or biological molecules outside their normal biological context. Colloquially called "test-tube experiments", these studies in biology and its subdisciplines are traditionally wiped out labware like test tubes, flasks, Petri dishes, and microtiter plates. Studies conducted using components of an organism that are isolated from their usual biological surroundings permit a more detailed or more convenient analysis than are often through with whole organisms; however, results obtained from in vitro experiments might not fully or accurately predict the consequences on an entire organism. In contrast to in vitro experiments, in vivo studies are those conducted in living organisms, including humans, and whole plants.

Biography

Maria Fernanda Chiari graduated in biological sciences at Universidade Estadual do Norte do Paraná (2007) and became master in biotechnology at Universidade Federal de São Carlos in 2010. She is currently a fellow of CAPES doctoral program in biotechnology also from the Universidade Federal de São Carlos - UFSCar, working in the field of parasitology and immunology.

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