Anti-giardial therapeutic potential of dichloromethane extracts of Zingiber officinale and Curcuma longa in vitro and in vivo

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Abstract:

Giardiosis is one of the common parasitic diarrhea in human especially in children worldwide. Many drugs are used for its treatment, but there are evidences of drug resistance, insufficient efficacy and unpleasant side effects. Natural products are good candidates for discovering more effective antiparasitic compounds. This study evaluated the antigiardial activity of extracts of Zingiber officinale (ginger) and Curcuma longa (curcumin) in vitro and in vivo in comparison to Metronidazol. Giardia cysts suspension was purified from children faecal specimens. For in vitro experiments; 1, 10 and 50 mg/mL dichloromethane extracts of ginger and curcumin separately were incubated with Giardia cysts for 5, 10, 30 and 60 minutes. The viability was assessed using eosin 0.1% and a hemocytometer. For in vivo experiments; Balb/c mice were infected with Giardia cysts suspension's and treated with 10 and 20 mg/kg/day ginger and curcumin extracts separately for 7 days. Effectiveness of treatments was evaluated through faecal cyst and intestinal trophozoite counts, histopathological examination of small intestinal. Ginger extract had a higher significant effect on cysts than curcumin. The cyst's fatality rates showed dose and time dependent manner in vitro. In vivo ginger and curcumin extracts caused significant reduction of faecal cyst and intestinal trophozoites counts. Histological analysis of microvilli revealed that ginger and curcumin extracts caused evident improvement of intestinal mucosal damages induced by Giardia infection with more significant effect after ginger extracts treatment. Extracts of Zingiber officinale and Curcuma longa may represent effective and natural therapeutic alternatives for human giardiosis.

Keywords:

Key words: antigiardial; Zingiber officinale, Curcuma longa; in vitro; in vivo.

Published In:

Parasitology Research, , (1), 1-9 , 1-9