

Anti-cancer potential of *Fasciola hepatica* extracts

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AIM

To investigate the oncogenic role of *F. hepatica* extracts.

BACKGROUND

- Fascioliasis is a food borne disease caused by infection with a liver fluke termed *Fasciola (F.) hepatica*. Fascioliasis, as a neglected tropical disease, commonly affects poor people from developing countries. It has been estimated that at least 2.6 million people are infected with fascioliasis worldwide.
- According to the International Agency for Research on Cancer, two other liver flukes *Opisthorchis viverrini* and *Clonorchis sinensis* have been recognized as definitive causes of cancer (IARC, 2012).
- On the other hand even long-lasting and/or repeated *F. hepatica* infections have not been associated with cancer, so far. There are any known causative associations between this parasite and cholangiocarcinoma or liver cancer.

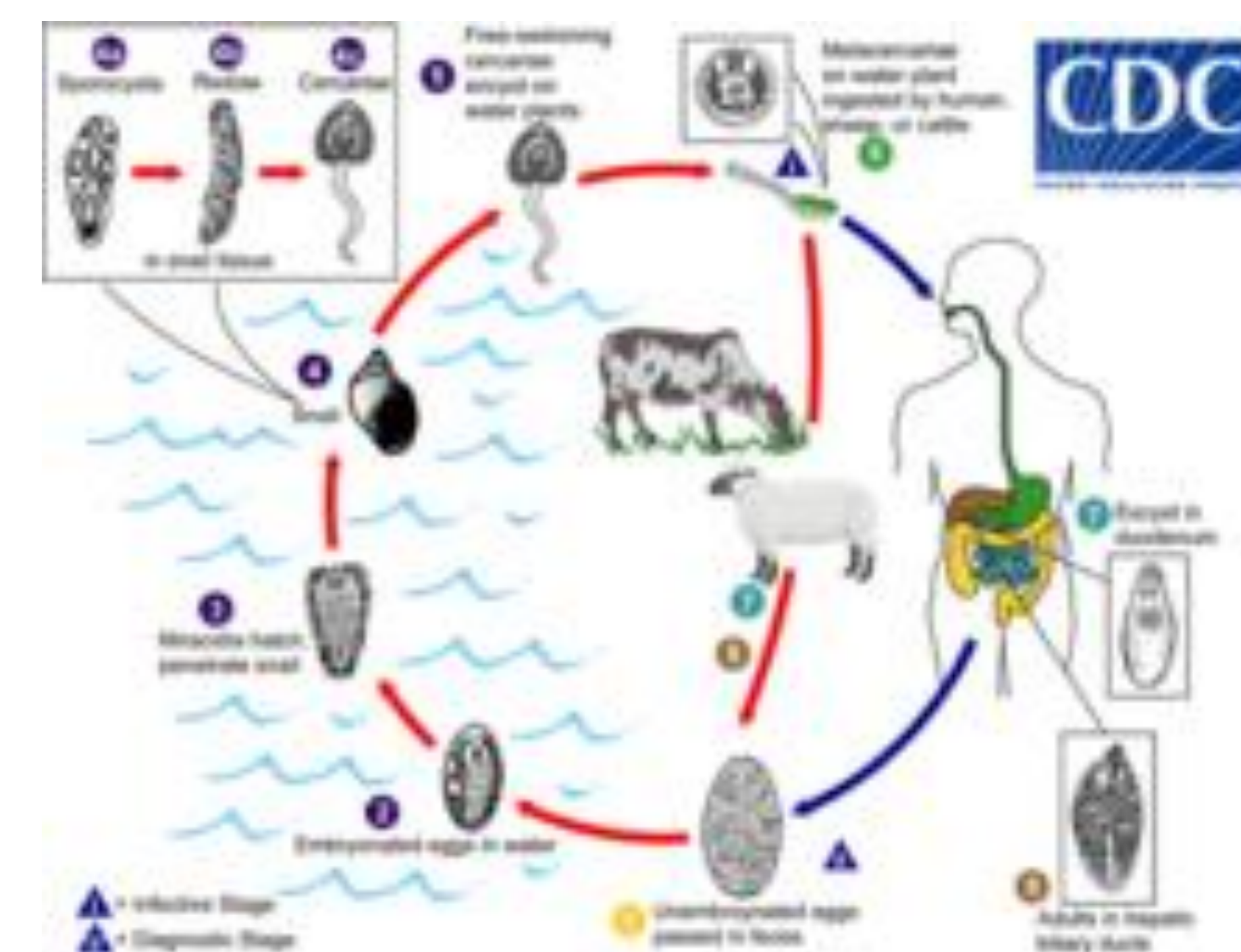


Fig. 1: *Fasciola hepatica* life cycle.

METHODOLOGICAL STRATEGY

Chine Hamster Ovary (CHO) cells were treated with *F. hepatica* extracts and cell proliferation was assessed by using the indirect method for estimating cell number based on the mitochondrial dehydrogenase activity, which reduces sodium 2,3-bis[2-Methoxy-4-nitro-5-sulphophenyl]-2H-tetrazolium-5-carboxyanilide inner salt) with MTS cell proliferation reagent.

RESULTS

Surprisingly we observed unexpected death of CHO cells when treated with *F. hepatica* extracts.



Fig. 2: Cell proliferation assay of *Fasciola hepatica* and *Schistosoma haematobium* extracts-treated cells. The growth curve shows that treated cells with *F. hepatica* showed no growth while cells treated with *S. haematobium* proliferated significantly faster and more than control cells (Left panel). Trypan exclusion assay of control and *F. hepatica* and *S. haematobium*-treated cells. We confirmed the induced necrosis of CHO cells when treated with *F. hepatica* extracts and increase in cell viability when treated with *S. haematobium* extracts by trypan exclusion assay. (Right panel).

CONCLUSIONS

- We now hypothesize that some molecules contained in *F. hepatica* extracts could have a potential as a preventive or even curative anti-cancer substance.