Effect of *Mesocestoides corti* and *Taenia crassiceps* larvae on melanoma tumors in mice

M. Schreiber[1], J. Brábek[2], D. Rösel[2], O. Tolde[2] P. Horák[1]

[1]Department of Parasitology, Faculty of Science, Charles University, Prague, Czechia
[2]Department of Cell Biology, Faculty of Science, Charles University, Prague, Czechia

Introduction

Several studies have shown that infection with helminths may affect the development of cancer.

Some species like *Opisthorchis viverrini* or *Schistosoma haematobium* can promote the development or even be the causative agent of cancer [1].

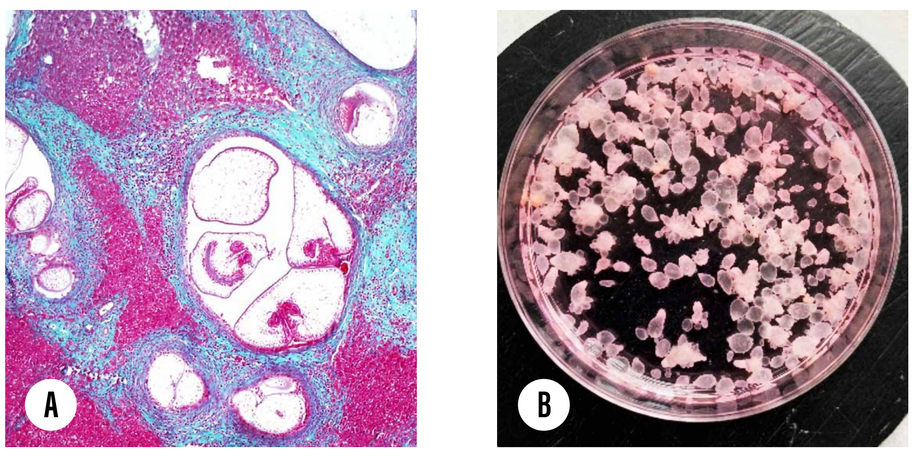
On the other hand, infections with other species, such as *Trichinella spiralis*, can reduce tumors and potentially have a protecting effect [2,3].

The aim of this work was to investigate the effect of the cestodes *Mesocestoides corti* and *Taenia crassiceps* on B16F10 melanoma tumor development in mice.

Model organisms

Mesocestoides corti and *Taenia crassiceps* are tapeworms, larvae of which are characterized by their ability to reproduce asexually.

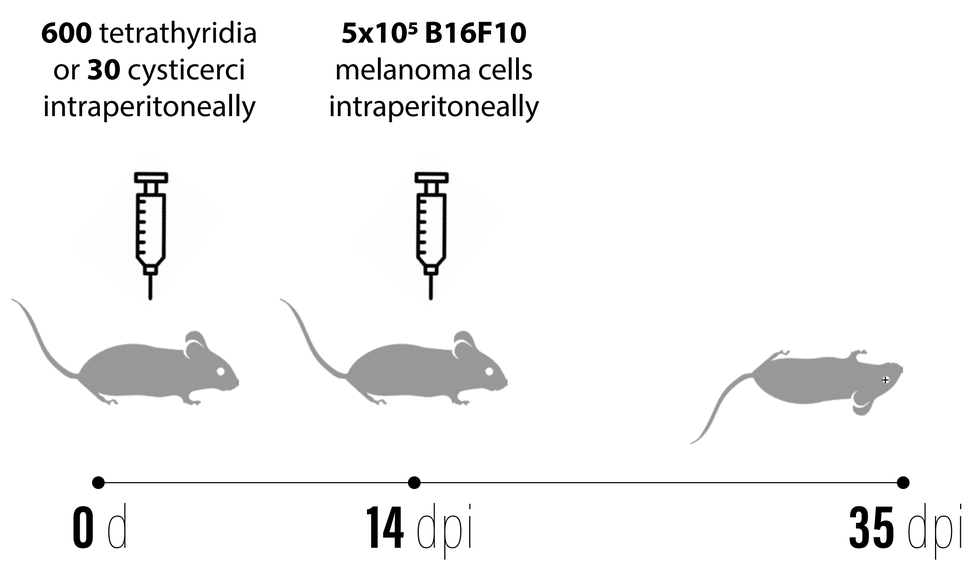
Fig. 1: Tapeworm larvae



A) Larvae of *M. corti* (tetrathyridia) in histological section of mice liver
B) Larvae of *T. crassiceps* (cysticerci)

Experimental design

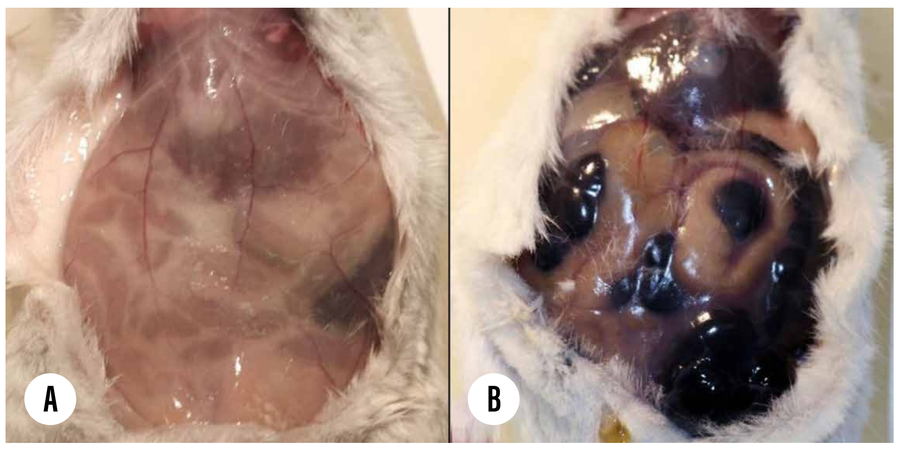
Fig. 2: Experimental timeline



Results

Infection with *M. corti* completely eliminates intraperitoneally injected melanoma cells in BALB/c mice

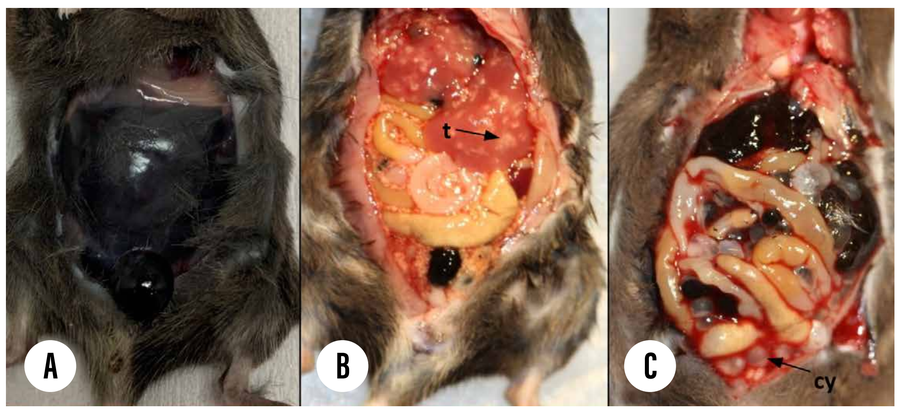
Fig. 3: Melanoma tumor development in BALB/c mice



A) *M. corti*-infected **B)** Non-infected mouse

Infection with *M. corti* and *T. crassiceps* supresses the development of tumors in C57BL/6J mice

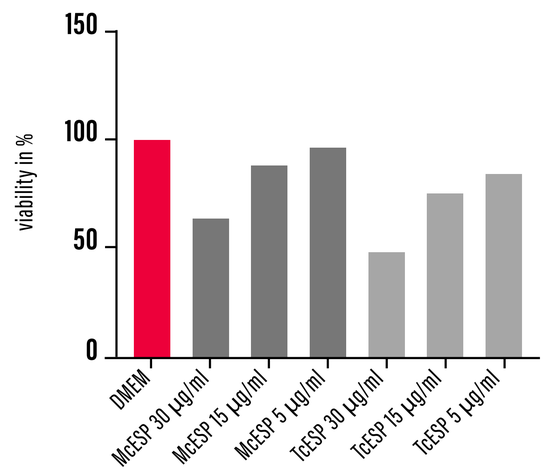
Fig. 4: Melanoma tumor development in C57BL/6J mice



A) Non-infected mouse **B)** *M. corti*-infected mouse
C) *T. crassiceps*-infected mouse; **t** - tetrahtiridia, **cy** - cysticercus

Larval excretory-secretory products of both tapeworms decrease the viability of B16F10 cells *in vitro*.

Fig. 5: Viability of B16F10 cells cultivated with excretory-secretory products of tapeworm larvae



Viability was measured via AlamarBlue assay. B16F10 cells were cultured for 72 hours in the presence of ES products of tapeworm larvae.
McESP - ES products of *M. corti* larvae; TcESP - ES products of *T. crassiceps* larvae; DMEM - pure culture medium; 100% represents the viability of cells cultured in pure DMEM medium

Conclusion

Both tapeworms showed a strong suppressive effect on the size and number of tumors and metastases formed when the cells were administered intraperitoneally. In some cases, it led to complete elimination of tumor cells. *In vitro* cultivation of B16F10 cells in the presence of larval excretory-secretory products led to a decrease in their viability. Our work confirmed the anti-tumor effect of *T. crassiceps* infection in mice and introduced *M. corti* as a new helminth species capable of influencing cancer.

Sources

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Manfred Schreiber
Contact: schreibm@natur.cuni.cz