The anthelmintic efficacy of natural plant cysteine proteinases against
two rodent cestodes Hymenolepis diminuta and Hymenolepis
microstoma in vitro

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Little is known about the efficacy of cysteine proteinases (CP) as
anthelmintics for cestode infections. We examined the effects of CPs on
two rodent cestodes, Hymenolepis diminuta and H. microstoma in vitro.
Our data showed that naturally occurring mixtures of CPs, such as those
found in papaya latex, and relatively pure preparations of fruit
bromelain, papain and stem bromelain, were active in vitro against both
juvenile, artificially excysted scolecites, as well as against adult worms of
both rodent cestodes. Significant dose-dependent reduction in motility,
ultimately leading to death of the worms, was observed with both
species, and against both freshly excysted scolecites and 14-day old pre-
adult worms. The most effective was fruit bromelain (after 30 min of
incubation of juvenile H. diminuta and H. microstoma IC50 = 63 and 74
mu M, respectively, and for pre-adult worms = 199 and 260 mu M,
respectively). The least effective was stem bromelain (after 30 min of
incubation of juvenile H. diminuta and H. microstoma IC50=2855 and
2772 mu M. respectively, and for pre-adult worms = 1374 and 1332 mu
M, respectively) and the efficacies of papaya latex supernatant and
papain were between these extremes. In all cases these values are
higher than those reported previously for efficacy of CPs against
intestinal nematodes, and in contrast to nematodes, all CPs were
effective against cestodes in the absence of exogenous cysteine in
incubation media. The CPs appeared to attack the tegument resulting in
generalised erosion mainly on the strobila. The scolex was more resistant
to CP attack but nevertheless some damage to the tegument on the
scolex was detected. Crown Copyright (C) 2013 Published by Elsevier B.V.
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Cysteine Proteinases; Anthelmintics; Hymenolepis Diminuta;
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Article

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