DEGRADATION OF HUMAN MATRIX METALLOPROTEASE-9 BY SECRETORY METALLOPROTEASES OF ANGIOSTRONGYLUS CANTONENSIS INFECTIVE STAGE

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Abstract. Angiostrongylus cantonensis infection is the major cause of eosinophilic meningitis. Successful migration and evasion of the immune system by infective-stage larvae (L3) rely heavily on secreted proteases, which activate human pro-matrix metalloprotease (MMP-9) into active MMP-9. This study showed that the proteases in excretory-secretory (ES) products of A. cantonensis third stage larvae degraded recombinant and native human proMMP-9 in a dose- and time-dependent manner. Protease inhibitory assays showed that metalloproteases were the key enzymes involved in the degradation of human proMMP-9. To assess the effects of ES products on inflammation, ES products were incubated with THP-1 human monocytic cells, which showed induction of MMP-2 and not MMP-9 production. These results indicated that degradation of human MMP-9 was due to metalloproteases present in ES of A. cantonensis L3, which may be involved in suppressing the host’s immune response to allow parasite migration to the host central nervous system.

Keywords: Angiostrongylus cantonensis, eosinophilic meningitis, matrix metalloprotease-9, excretory-secretory products, proteases, protease inhibitors

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