

***Trichinella spiralis* excretory-secretory products downregulate MMP-9 in Dark Agouti rats affected by experimental autoimmune encephalomyelitis**

Abstract

Matrix metalloproteinases (MMPs), are implicated in the pathogenesis of multiple sclerosis (MS) and in its animal model, experimental autoimmune encephalomyelitis (EAE). Our aim was to investigate whether amelioration of EAE in Dark Agouti (DA) rats, induced by *Trichinella spiralis* muscle larvae excretory-secretory products (ES L1), could be related to the level and activity of gelatinases, MMP-9 and MMP-2. Serum levels of MMP-9, MMP-2, NGAL/MMP-9, TIMP-1, and cytokines, evaluated by gel-zymography or ELISA, as well as gelatinases and TIMP-1 expression in the spinal cord (SC), were determined in: i) EAE induced, ii) ES L1-treated EAE induced animals. Milder clinical signs in ES L1-treated EAE induced DA rats were accompanied with lower serum levels of MMP-9 and NGAL/MMP-9 complex. However, the correlation between the severity of EAE and the level of serum MMP-9 was found only in the peak of the disease, with MMP-9/TIMP-1 ratio higher in EAE animals without ES L1 treatment. Lower expression of MMP-9 in SC of ES L1-treated, EAE induced rats, correlated with the reduced number of SC infiltrating cells. In SC infiltrates, in the effector and the recovery phase, production of anti-inflammatory cytokines IL-4 and IL-10 was higher in animals treated with ES L1 prior to EAE induction, compared to untreated EAE animals. Reduced expression of MMP-9 in SC tissue, which correlated with the reduced number of infiltrating cells, might be ascribed to regulatory mechanisms, among which is IL-10.