

IL-10 up-regulation induced by recombinant NcROP4 (rNcROP4) is able to reduce ileum inflammation in toxoplasmosis and delaying mortality in malaria experimental murine

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Toxoplasmosis and malaria are parasitic diseases caused by *Toxoplasma gondii* and *Plasmodium* spp., respectively. While toxoplasmosis affects approximately 50% of the world population, malaria is main cause of mortality by infectious disease in the world. Both parasites are protozoans from Apicomplexa phylum, sharing several characteristics, such as presence of secretory organelles (micronemes, rhoptries and dense granules). Another parasite of this phylum, closely related to *T. gondii* is *Neospora caninum*. In this work we aim to evaluate immunomodulatory potential of NcROP4, a rhoptry protein of *N. caninum*, during pathological processes generated by toxoplasmosis and malaria. For this purpose, the recombinant NcROP4 (rNcROP4) was produced in *Escherichia coli*. Then, C57Bl/6 and BALB/c mice were treated with rNcROP4, STAg (soluble *T. gondii* antigens) or PBS (control). Three days after treatment, mice were infected with 50 cysts of *T. gondii* (ME-49 strain). Peritoneal fluid and gut were collected seven days after infection to evaluate the IL-10 and IFN γ production. Histological analysis of intestinal segments were performed for evaluate the damages caused by infection. Moreover, morbidity and survival rate were evaluated in C57Bl/6 infected with *Plasmodium berghei* ANKA and treated with rNcROP4 or PBS (control) on day three and four after infection. Our results showed IL-10 up-regulation in rNcROP4 treated mice and infected with *T. gondii* both in the peritoneal fluid and in the gut (jejunum and ileum). IFN γ production was higher in STAg and PBS treated mice. rNcROP4 and STAg treated mice exhibited lower ileum damage mainly in BALB/c mice. Animals infected with *P. berghei* ANKA had lower morbidity and delayed in mortality when compared with control group. These results showed the anti-inflammatory properties of rNcROP4 with IL-10 up-regulation in acute *T. gondii*-induced ileitis and the capacity of delaying mortality in malaria experimental murine.

Key-Words: NcROP4, ileitis, toxoplasmosis, malaria.

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