Recombinant arginine kinase: a new antigen possibility for the immunodiagnosis of human strongyloidiasis

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Introduction: Arginine kinase has been identified as an interesting component in the excretion/secretion products of the infective larva of *Strongyloides*. In addition, studies indicate recombinant arginine kinase as a diagnostic marker for other helminthiasis, however its potential in the immunodiagnosis of human strongyloidiasis has not yet been explored. The aim of the present study was to express two recombinant arginine kinases: *Strongyloides stercoralis* (rSsAK) and *Strongyloides venezuelensis* (rSvAK) and evaluate their immunogenicity.

Material and methods: The arginine kinase genes from *S. stercoralis* (SsAk, Uniprot A0A0K0DZN6, 42.9 KDa) and *S. venezuelensis* (SvAK, Uniprot A0A0K0EZR7, 37.9 KDa) were synthesized and cloned into the expression vector (pET-15b) expressed in *Escherichia coli* BL21(DE3). The recombinant proteins (rSsAK and rSvAK) were expressed as inclusion bodies in the insoluble fraction. After solubilization in 8 M urea, they were recovered on sepharose resin (HisTrap™ HP) and eluted with 500 mM imidazole. Then, they were resuspended in buffer (50 mM Tris-HCl, pH 7.2, 150 mM NaCl and 2% glycerol). To verify immunogenicity, ELISA was performed using a pool of sera from individuals positive (positive control) and negative (negative control) for *S. stercoralis* infection.

Results and discussion: After desalination, ~0.5 mg/mL of each recombinant was obtained. Both proteins were recognized by IgG antibodies present in positive control serum samples. Different concentrations were evaluated in the microplate (1, 5 and 10 µg/mL). For rSvAK, it was observed that the negative and positive controls differentiated (absorbance of 0.300 and 0.800) at concentrations of 5 and 10 µg/mL, while rSvAK presented the best results at the concentration of 10 µg/mL (absorbance of 0.300 and 0.500).

Conclusions: It can be seen that the proteins (rSsAK and rSvAK) can be used in the future as a marker in the immunodiagnosis of human strongyloidiasis, with emphasis on the arginine kinase from *S. stercoralis*.

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