STRUCTURAL CHARACTERIZATION OF THE *Leishmania braziliensis* OLD YELLOW ENZYME: A PRELIMINARY STUDY

Veloso-Silva, L.L.W.¹; Reis, D.E.B.¹; Dores-Silva, P.R.¹; Borges, J.C.¹

¹Instituto de Química de São Carlos, Universidade de São Paulo, São Carlos, Brazil.

INTRODUCTION: Old Yellow Enzymes (OYE) are NAD(P)H oxidoreductase which can reduce a variety of compounds. The OYE family is wide and, to date, it has been identified in fungi, plants, bacteria, but not in animals, making it an interesting target for inhibition, thereby reducing the possibility of side effects in humans. Structural and functional studies of OYE are of great interest for understanding the behavior of these enzymes across the various compounds described as substrates and for description of its physiological role in organisms in which it has been identified. **OBJECTIVES:** Here, we carried out a preliminary study on the structural characterization of *Leishmania braziliensis* Old Yellow Enzyme (LbOYE). Still does not have structural and functional data of this enzyme and thus, this study aims to obtain such information. **MATERIAL AND METHODS:** For this, the recombinant protein was produced in *Escherichia coli* BL21 (DE3) strain and purified by two chromatography steps. The obtained protein was structurally characterized by circular dichroism, intrinsic emission fluorescence, analytical size-exclusion chromatography and small angle X-ray scattering (SAXS). **RESULTS AND DISCUSSION:** The recombinant LbOYE was obtained with high purity, folded and behaved as a globular monomer. Fluorescence studies suggest that the tryptophan residues are partially protected from the solvent. Besides, it was obtained bound to FMN coenzyme. SAXS data indicate LbOYE as a monomer and pointed that it presents a globular shape. Furthermore, the radius of gyration, molecular mass and maximum distance was determined by SAXS obtaining the following values: 27±3 Å, 40±4 kDa and 95±10 Å, respectively. **CONCLUSIONS:** Here we report the production of the recombinant LbOYE folded, which will allow interacting tests with several ligands. It is important to emphasize that the present work is a preliminary study and that further tests are being conducted for a complete understanding of LbOYE structure and function.

**Keywords:** Leishmania, NAD(P)H oxidoreductase, OYE.

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