The crystallographic structure of the Ssua protein shows how alkanesulfonates initiate their way into the cell

A. Balan[a], F. T. de Araújo[b], M. Sanches[a], L. C. de S. Ferreira[b], A. Chiuli[c], V.-B. Garcia[c], D. Chigardze[c], T. L. Blundell[c] e J. A. R. G. Barbosa[a]

[a] Centro de Biologia Molecular Estrutural de Proteínas, Laboratório Nacional de Luz Síncrotron (LNLS), Campinas, Brazil**;** [b] Departamento de Microbiologia, ICB-2, Universidade de São Paulo, São Paulo, Brazil. [c] Department of Biochemistry, University of Cambridge, Cambridge, England.

Xanthomonas axonopodis pv. *citri* is the causative agent of the citrus canker, a disease that infects millions of plants in Brazil and in the world. In accordance to the differences in the mechanisms of infection and pathogenesis between this specie and *X. campestris,* the genome of both bacteria revealed the presence of different ABC transporters, including the alkanesulfonate transporter SsuABC, only found in *X. axonopodis* and which function is not known. Here we describe the crystal structure and biochemical characterization of the SsuA periplasmic-binding protein, responsible for the initial capture of alkanesulfonates. SsuA shows an α/β sandwich topology with two domains separated by a cleft where a HEPES is bound. Spectroscopic analyses of the protein revealed that it was stable in neutral pH and suffered structural changes in presence of MOPS, CHES and MES. Indeed, in the presence of these ligands, the protein showed an increased thermal stability, as evidenced by thermal shift assays. Molecular modelling of the interactions made between SsuA and these alkanesulfonates revealed the structural basis for the increasing in the thermal stability and binding. The importance of SsuA and SsuABC transporter for *X. axonopodis* is discussed.

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