16th International Congress on Photobiology

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SEPTEMBER 8th - 12th, 2014

Universidad Nacional de Córdoba
Córdoba, Argentina

International Union of Photobiology

1613 - 2013 400 AÑOS

UNC Universidad Nacional de Córdoba

PO109-Xanthorhodopsin Encoding Genes in Hight Altitude Lake

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Studies in Hight Altitude Andean Lake (HAAL) were focused mainly on microbial diversity, arsenic resistence, UV radiation and antibiotic [1-3]. In this study, we attempted to determine how the light is used as energy source in these ecosystems.

We identified proton-pumping rhodopsins encoding gene sequences in the genomes of three novel *Salinivibrio* spp. Strains. The aminoacid sequences were related to the xanthorhodopsin (XR) from *Salinibacter ruber,* 45% identity average. We observed the presence of the genes for β-carotene and retinal biosynthesis. Also, XR S34 contain the majority of functionally important residues known for retinal binding, proton transport and structure **(Figure 1)**[4, 5].

In the present study we disclosed for the first time, XR-like genes in HAAL and the unusual occurrence in *Salinivibrio*. The presence of these genes could improve the ecological fitness of the three novel *Salinivibrio* strains that live in the Socompa Lake.

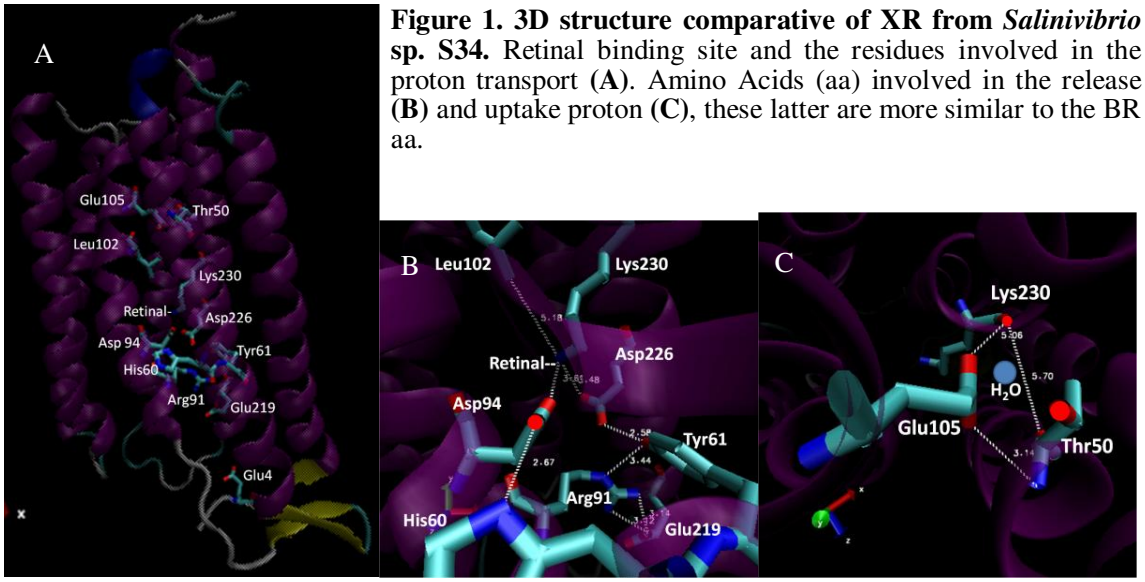

Figure 1. 3D structure comparative of XR from *Salinivibrio* sp. S34. Retinal binding site and the residues involved in the proton transport **(A)**. Amino Acids (aa) involved in the release **(B)** and uptake proton **(C)**, these latter are more similar to the BR aa.

Acknowledgments This study was supported by the CONICET, CNPq, CAPES, and FAPERJ. The authors wish to acknowledge Dr. Wolfgang Gärtner for the generous critical reading of the manuscript.
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