XLIX SAB
2021

XLIX Reunión Anual SAB

1 al 3 de diciembre 2021

Sociedad Argentina de Biofísica
XLIX Reunión Anual SAB / compilación de José María Delfino ... [et al.]. - 1a ed. - Ciudad Autónoma de Buenos Aires: SAB - Sociedad Argentina de Biofísica, 2021.
Libro digital, PDF

Archivo Digital: descarga y online
ISBN 978-987-27591-9-3

1. Biofísica. 2. Investigación Experimental. I. Delfino, José María, comp. II. Título.
CDD 571.4

Diagramación y Edición

M. Soledad Celej, Irene Mangialavori

Diseño de Tapa y Logo

Comité organizador

Asistencia Técnica

Juan Pablo Acierno

Sociedad Argentina de Biofísica

Member of the International Union for Pure and Applied Biophysics

XLIX Reunión Anual SAB

1-3 de diciembre de 2021

Argentina

XLIX Annual Meeting SAB

1-3 December 2021

Argentina

Unravelling the physiological and molecular function of the betaine-sensitive receptor in *Caenorhabditis elegans*: a new target for anthelmintic drugs.

Turani O[a], Hernando G[a], Bouzat C[a]
a - INIBIBB- UNS/CONICET- Bahía Blanca- Argentina

The free-living nematode *Caenorhabditis elegans* is a model of parasitic nematodes. This worm has the most extensive family of Cys-loop receptors, which are pentameric ligand-gated ion channels that include nicotinic receptors (nAChRs). *C. elegans* contains an extended family of nAChRs but the functional properties and roles of many of these nAChRs remain unknown. ACR-23 is a nAChR present in neuronal and muscle cells of nematodes and is not conserved in vertebrates. It is a cation-selective channel activated by betaine (BE) and sensitive to monepantel (MNP), a new anthelmintic drug. Given the limited information about its functional role in nematodes, we explored ACR-23 from a pharmacological, physiological, and molecular perspective. Locomotion assays of adult worm showed that BE significantly increased motility. This effect was not observed in *acr-23* mutants, indicating that BE acts through ACR-23. MNP decreased worm motility in the adult stage in a concentration-dependent manner with an EC_{50} of about 30 µM. The *acr-23* mutant showed different MNP sensitivity compared to the wild-type strain, indicating that, in addition to ACR-23, other receptors may be targeted by MNP. By using a primary culture of *C. elegans* muscle cells, we described for the first time the properties of BE-elicited single-channel currents. Opening events showed a mean duration of 0.3 ms and amplitude of about 2.4 pA at a holding potential of 100 mV. The identification and functional characterization of receptors for BE and MNP provides insights into the molecular basis of anthelmintic action, which pave the way for anthelmintic drug design.

Acknowldegments

We thank Dr. Carlos Lanusse and Dra. Mariana Ballent (Centro de Investigación Veterinaria de Tandil) for providing Monepantel.