IUPHAR/BPS Guide to Pharmacology CITE
https://doi.org/10.2218/gtopdb/F83/2021.3

ZAC in GtoPdb v.2021.3

Paul Davies[1], Tim G. Hales[2], Anders A. Jensen[3] and John A. Peters[2]

1. Tufts University, USA
2. University of Dundee, UK
3. University of Copenhagen, Denmark

Abstract

The zinc-activated channel (ZAC, **nomenclature as agreed by the NC-IUPHAR Subcommittee for the Zinc Activated Channel**) is a member of the Cys-loop family that includes the nicotinic ACh, 5-HT_3, $GABA_A$ and strychnine-sensitive glycine receptors [2, 3, 4]. The channel is likely to exist as a homopentamer of 4TM subunits that form an intrinsic cation selective channel equipermeable to Na^+, K^+ and Cs^+, but impermeable to Ca^{2+} and Mg^{2+} [4]. ZAC displays constitutive activity that can be blocked by tubocurarine and high concentrations of Ca^{2+} [4]. Although denoted ZAC, the channel is more potently activated by H^+ and Cu^{2+}, with greater and lesser efficacy than Zn^{2+}, respectively [4]. ZAC is present in the human, chimpanzee, dog, cow and opossum genomes, but is functionally absent from mouse, or rat, genomes [2, 3].

Contents

This is a citation summary for ZAC in the Guide to Pharmacology database (GtoPdb). It exists purely as an adjunct to the database to facilitate the recognition of citations to and from the database by citation analyzers. Readers will almost certainly want to visit the relevant sections of the database which are given here under database links.

GtoPdb is an expert-driven guide to pharmacological targets and the substances that act on them. GtoPdb is a reference work which is most usefully represented as an on-line database. As in any publication this work should be appropriately cited, and the papers it cites should also be recognized. This document provides a citation for the relevant parts of the database, and also provides a reference list for the research cited by those parts. For further details see [1].

Please note that the database version for the citations given in GtoPdb are to the most recent preceding version in which the family or its subfamilies and targets were substantially changed. The links below are to the current version. If you need to consult the cited version, rather than the most recent version, please contact the GtoPdb curators.

Database links

ZAC
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=83
Introduction to ZAC
https://www.guidetopharmacology.org/GRAC/FamilyIntroductionForward?familyId=83
Channels and Subunits
ZAC
https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=587

References

1. Buneman P, Christie G, Davies JA, Dimitrellou R, Harding SD, Pawson AJ, Sharman JL and Wu Y. (2020) Why data citation isn't working, and what to do about it *Database* **2020** [PMID:32367113]
2. Davies PA, Wang W, Hales TG and Kirkness EF. (2003) A novel class of ligand-gated ion channel is activated by Zn2+. *J Biol Chem* **278**: 712-7 [PMID:12381728]

3. Houtani T, Munemoto Y, Kase M, Sakuma S, Tsutsumi T and Sugimoto T. (2005) Cloning and expression of ligand-gated ion-channel receptor L2 in central nervous system. *Biochem Biophys Res Commun* **335**: 277-85 [PMID:16083862]
4. Trattnig SM, Gasiorek A, Deeb TZ, Ortiz EJ, Moss SJ, Jensen AA and Davies PA. (2016) Copper and protons directly activate the zinc-activated channel. *Biochem Pharmacol* **103**: 109-17 [PMID:26872532]