

Subject area: BIO**Preclinical study of selenium-containing quinolines: advances and perspectives****Ethel A. Wilhelm (PQ)^{1*}*****ethelwilhelm@yahoo.com.br**¹*Programa de Pós-graduação em Bioquímica e Bioprospecção, Laboratório de Pesquisa em Farmacologia Bioquímica - LaFarBio, Universidade Federal de Pelotas – UFPel, Brasil.*Keywords: *quinoline, selenium, biological activities.***Highlights**

Preclinical studies revealed the pharmacological potential of selenoquinoline derivatives. Selenoquinoline compounds exerts antinociceptive, anti-inflammatory and neuroprotective actions.

Abstract

Selenium, an essential element, is of fundamental importance to human health. As a constituent of the small group of selenoproteins, selenium elicits important structural and enzymatic functions.^{1,2} In turn, the versatility of quinoline and its derivatives has attracted great attention in the field of drug development.³⁻⁵ According to recent data, many green and sustainable synthetic approaches have been developed for the synthesis of structurally diverse quinolines and organoselenium compounds. A literature survey indicates that only a few publications have mentioned the incorporation of a selenium atom in the quinoline structure. Consequently, synthesis and biological screening of selenoquinoline derivatives may be considered a relevant research area. In this lecture, some results of preclinical studies developed in the Laboratory of Research in Biochemical Pharmacology (LaFarBio) at UFPel will be presented. The perspectives in this area will be discussed. The research developed in LaFarBio involves pharmacological evaluations of antioxidant molecules, especially quinoline derivatives containing selenium, aiming at the development of new therapeutic alternatives for the treatment of pain, inflammation as well as cognitive damages. In addition, the pharmacological bases of the therapeutics and their implications for understanding the action mechanisms and for the development of new drugs are studied.

¹ L.V. Papp, J. Lu, A. Holmgren, K.K. Khanna, *Antioxid. Redox Signal*, 2007, **9**, 775–806.

² N.V. Barbosa, C.W. Nogueira, P.A. Nogara, A.F. de Bem, M. Aschner, J.B.T.Rocha, *Metallomics*, 2017, **9**, 1703-1734.

³ C. Manera, A.M. Malfitano, T. Parkkari, V. Lucchesi, S. Carpi, S. Fogli, S. Bertini, C. Laezza, A. Ligresti, G. Saccomanni, J.R. Savinainen, E. Ciaglia, S. Pisanti, P. Gazzero, V. Di Marzo, P. Nieri, M. Macchia, M. Bifulco, *Eur. J. Med. Chem.*, 2015, **97**, 10e18.

⁴ A.C. Mantovani, A.P. Pesarico, T.B. Sampaio, C.W. Nogueira, G. Zeni, *Eur. J. Pharm. Sci.* 201451, 196e203.

⁵ A. Marella, O.P. Tanwar, R. Saha, M.R. Ali, S. Srivastava, M. Akhter, M. Shaquiquzzaman, M.M. Alam, *Saudi Pharm. J.* 2013, **21**, 1e12.