SECONDARY METABOLITES FROM PLANT SPECIES – RATIONAL APPROACH TO IDENTIFY NEW TARGETS FOR CENTRAL NERVOUS SYSTEM (CNS) DISEASES

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Secondary metabolites isolated from plant species continue up-to-date as pharmaceutical leads, even after the genome era, because most currently available classes of drugs either contain natural products or have these as original sources. The huge biodiversity found in Brazil makes it a very feasible source of new drugs. Taking into account the importance of our biological resources, a Program on Sustainable Uses and Conservation of Biodiversity was created (Biota-FAPESP). Bioprospection research accomplished by NuBBE in this Program resulted in a valuable collection of bioactive extracts and compounds, which were screened in different bioassays. Several of these extracts presented *in vitro* and *in vivo* CNS activity, and one obtained from *Erythrina mulungu* showed particular interest due to its activity on neuronal nicotinic acetylcholine receptors (nNAChR), which are involved in many conditions such as Alzheimer's and Parkinson's diseases, cognitive deficits and epilepsy. Natural and synthetic nicotinic ligands show neuroprotective, anxiolytic, anti-depressant and analgesic activities. Thus, the activity of *E. mulungu* on nNAChRs is highly relevant for the development of new drugs. Bioassay-guided fractionation of this extract led to the isolation of 3 erythrinian alkaloids, which have shown potent effects in blocking all subtypes of nNAChRs tested. This interaction with NAChRs may be implicated in the anxiolytic effects shown *in vivo* by these alkaloids and by the crude plant extract, and corroborates the popular use of this species to treat anxiety.