Systematic review and meta-analysis of the scientific production of medicinal plants with anticholinesterase action

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Introduction

Alzheimer's disease (AD) is the most common form of dementia, is a neurodegenerative disorder that has no cure until the date. The histological and pathophysiological bases of the disease are based on the depletion of acetylcholine. The therapeutic approaches developed over the last few years ago, wanted to potentialize the functioning of the cholinergic system of patients with AD. In the literature we found several studies of natural products and their inhibitory action of acetylcholinesterase (AChE). In view of this, this study aimed to analyze studies evaluating medicinal plants with action acetylcholinesterase in vitro, in order to avoid side effects that pharmaceuticals provide.

Results and Discussion

For this, a systematic review and meta-analysis after the data was performed. Inclusion criteria was considered a search in the databases Pubmed, Scielo, Bireme and academic google with the following descriptors: "acetylcholinesterase inhibition, plants and anticholinesterase", "Alzheimer and acetylcholine," "extracts and plants in vitro". Exclusion criteria: review articles and only used that work in vivo. It was made an association of data was performed where compared the species, families, used parts, the types of extract and inhibitory potential. The analysis was done through the program "Graphpad prism" 6.0 for the analysis of the frequencies of the data was used chi-square test or Fisher extract the correlations was used spearman test (p <0.05 was considered significant). Until the moment they found 30 articles, 40 species and 21 families. The association of data with type of solvent, family, species and the potential for inhibition of AChE showed positive correlation, but not significant. Some association showed no inhibitory effect on AChE, and they Bauhinia cheliontha, Bowdichia virgilioides, Chrysobalanus icaco L., Erythrina, Phoradendron piperoides, Sideroxylon obtusifolium e Vitex agnus-castus L. Vinutha et al. (2007), classified the AChE inhibitor extracts: potency (> 50% inhibition), moderate (30-50% inhibition) and weak (<30% inhibition). Potential associations were: Amburana cearensis, Annona coriacea, Bougainvillea glabra, Cassia fistula L., Citrus limonina, Ficus benjamina, Ipomoea sp., Jatropha sp., Kalanche sp., Lippia sidoides, Phyllanthus amarus, Plathymenia reticulate, Senna sp., Solanum asperum, Triphasia trifolia, Vitex agnus-castus L. With this finding, a association that is likely to easily reach a high percentage of inhibition, would be species of the Convolvulaceae family, leaf as part used and ethanol extract because they presented high average of AChE enzyme.

Conclusion

The constant search for AChE inhibitors for the treatment of AD, has present low cost and high accessibility. The above plants which showed moderate to potent activity become important sources of further studies for finding new AChE inhibitors. Those that, for some reason, have shown with low or no inhibition, it can be assumed that it was due to the low concentration of the extracts, the region at the time it was collected the vegetable and / or mainly to the combination. They may also simply have no effect on the inhibition of said enzyme.

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References