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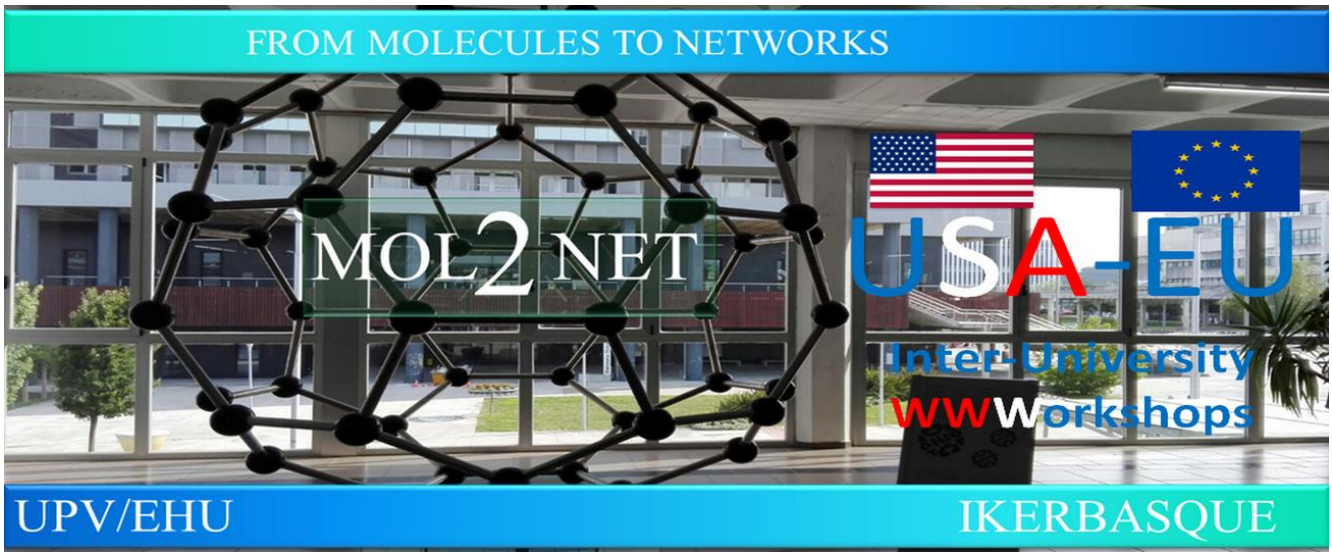

Brazilian cyclotides from plants: An overview

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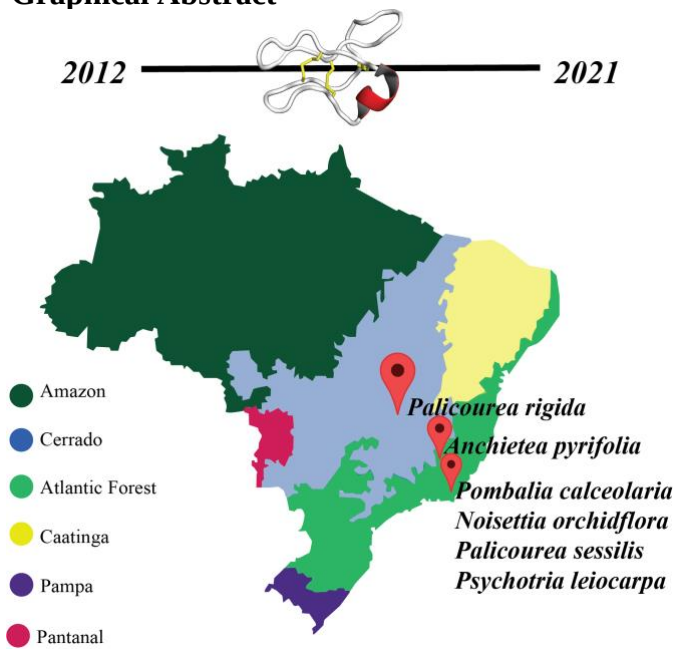
Graphical Abstract



Abstract

Some flowering plants biosynthesize peptides known as cyclotides. These peptides present a peculiar cyclic structure with a molecular weight range of 2.8 to 3.7 kDa. They are characterized by a head-to-tail cyclized backbone, which is stabilized by three disulfide bonds forming a cyclic cystine knot (CCK) motif.[1-3] This structural topology allows remarkable stability, with exceptional resistance to thermal, chemical, or enzymatic degradation.[4] The structural features confer to these "mini-proteins" several biological properties, which have attracted attention from both the scientific community and the pharmaceutical industry. In Brazil, the

	research focus on this class of natural products is underexploited. It gathers one of the largest biodiversity in the world, with distinct biomes being an ideal 'playground' for phytochemists to discover peptides from plants. However, there are only a few studies reporting cyclotides from Brazilian plants.[5-11] The relative lack of study of cyclotides in Brazilian plants probably reflects an earlier focus among Brazilian researchers on nonpeptidic natural products. It is estimated that Violaceae and Rubiaceae plants could exhibit >150,000 individual cyclotides.[12] Thus, this work presents an overview of Brazilian studies focusing on cyclotides, their sequence diversities and reported activities.

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