ABSTRACT

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Title of Diploma Thesis: Isolation of alkaloids of the species *Geissospermum vellosii* Allemão and study of their biological activity V.

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The *Geissospermum vellosii*, a tree traditionally growing in the Amazon rainforest is rich in indole alkaloids, which showed a potential effect in the treatment of cognitive degeneration such as Alzheimer's disease. In the previous study of ADINACO group, a diethylether alkaloidal extract from 43 kg of dried crushed stem bark was prepared and separated by column chromatography into 16 fractions (GV). In this study, we used flash chromatography to further separate the fraction GV-3 (1.37 g) into 11 subfractions (A–K). Based on control TLC, we focused on subfractions C and J, from which three alkaloids were isolated by preparative TLC. The NMR and GC/MS-EI techniques determined the structure and confirmed the purity of the obtained compounds. The compounds were identified as 19,20-dihydrovincanine, 1,2-didehydroaspidospermidine and zenkerene. In order to study antineurodegenerative activities, the alkaloids were tested against human acetylcholinesterase (*h*AChE) and butyrylcholinesterase (*h*BChE). The measured inhibition for the *h*AChE was negligible, but the inhibition activity against *h*BuChE was substantially higher for all compounds. The best activity presented 1,2-didehydroaspidospermidine with IC_{50} = 10.7 µM for *h*BChE. All compounds were also assessed to be non-cytotoxic on hepatocarcinoma cells lines HepG2.