Results and Discussion: Plants selected are traditionally used for the treatment of various ailments, and despite its traditional use, there is a lack of investigation on their pharmacological properties. HPLC fingerprints of the extracts showed the presence of several phenolics. All extracts significantly decreased cell death induced by t-BOOH. Pm exhibited effective scavenging of superoxide radical and Fe2+ chelating ability. Incubation of HepG2 cells with Cc and Pm extracts also induced significantly increased in GSH levels and expression of cytoprotective enzymes. Pb and Ac demonstrated, in general, cytotoxic activity against cell lines tested.

Conslusion: Further studies are needed in order to elucidate the relationship between the compounds present in plant extracts and their protective and cytotoxic effects.

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### *Development of polymeric nanoparticles containing neuroprotective compounds of Hypericum perforatum*

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Introduction: Neurodegenerative process involves several mechanisms. Hypericum perforatum extracts have been used for their antidepressive effects. A selected fraction (HP) of these extracts proved to be neuroprotective.

Objectives: Study the neuroprotective potential of H. perforatum selected compounds and entrap them into polymeric nanoparticles for brain delivery.

Materials and Methods: Compound isolation from H. perforatum was performed through isolation and purification methods and characterized by HPLC-DAD. HP poly(Ɛ-caprolactone) (PCL)-nanoparticles were prepared by nanoprecipitation, extensively characterized and antioxidant activity was assessed. HP and its nanoparticles assessment of cellular toxicity was performed by MTT assay in several cell lines. To study HP ability to protect cells against t-BOOH-induced toxicity two incubation regimens were used. In the lipid peroxidation assay, co-incubation regimen was used. Permeability assays of HP and its nanoparticles were performed in an in vitro BBB model.

Results and Discussion: A mixture of quercetin and biapigenin was isolated from H. perforatum and successfully encapsulated on PCL nanoparticles. The better proportion of PCL: HP of those studied, was of 1:0.1, with association efficiency of 99.7% and loading capacity of 5.3%. On the release profile, biphasic release was verified, including an initial burst followed by a slow release. Antioxidant activity assays revealed that encapsulation didn't alter HP functional properties. All cell lines responded differently to HP and its nanoparticles. Effects of HP and its nanoparticles against t-BOOH-induced lipid peroxidation were coherent with MTT results. Regarding permeability assay, HP PCL-loaded nanoparticles revealed to be more permeable than HP.

Conclusion: This is the first report of effective encapsulation of HP into PCL nanoparticles and also revealed its potential for brain delivery. More studies are however needed in order to extrapolate to in vivo situations.

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***Role of pharmacogenomics in predicting antidepressant response and individualizing therapy***

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Introduction: Major Depressive Disorder (MDD) is a highly prevalent chronic psychiatric condition with significant morbidity. Despite several antidepressants drugs (AD) available, a wide fraction of patients fail to respond, present relapse or display treatment resistant depression (TRD). Pharmacogenomics could help identify patients at risk of relapse or TRD and possibly have a direct impact on personalizing therapy. Additionally, recent studies suggested that immune activation and cytokines may be involved in depression, and its normalization occurs after antidepressant treatment. The proinflammatory cytokines interleukin-18 (IL-18) and IL-6 are less reported in depression, but considered to be relevant since they have been found to be increased in patients with depression.