Cytotoxicity of Phytochemicals in Different Leukemic Cells and Supplementation with GSH

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Introduction: Compounds found in nature, show an enormous range of diversity in terms of structure and pharmacologic activities. Plants play a surprisingly important source of new treatments for cancer, despite advances in chemical synthesis.

Material and Methods: Thus the aim of this study was to evaluate six phytomedicine belonging to the class of lignoid (dimethoxymagnolol, grandisin and yangambin) and riparins (I, II and III) with and without glutathione supplementation (GSH – 1mM) in three leukemic lines, K562, U937 and HL60. Material and Methods: the cell viability was evaluated by MTT reduction and trypan blue exclusion assays in leukemic cells treated with the phytochemicals (with or without GSH supplementation).

Results and Discussion: In the U937 cell IC50 values found were 200 μM, 100 μM and up to 500 μM in the cells treated with dimethoximagnolol, grandisin and yangambin, respectively and 150, 25 and 15 μM (riparin I, II and III, respectively). In K562 cells the treatment with riparins were the most effective class of compounds studied since it was determined IC50 values of 125, 27 and 15μM (riparin I, II and III, respectively). Different values were determined in the HL60 cells treated with riparins (300, 100 and 75 μM for riparin I, II and III, respectively). GSH ameliorated only the toxic effects evaluated in U937 cell treated with riparin II, since it was not observed different results in the others cell lines treated with the studied compounds plus GSH.

Conclusion: All the compounds investigated in this work has antitumoral effects, however the action mechanism of riparin II is different on U937 cell since GSH supplementation protected the toxic effects. Probably, riparin II triggered cell death by stress oxidative pathway.

Key Words: phytochemicals, leukemic cell, MTT reduction