Antiproliferative Effects of Two Amides, Piperine and Piplartine, from *Piper* Species

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The present work evaluated the cytotoxicity of piplartine {5,6-dihydro-1-[1-oxo-3-(3,4,5-trimethoxyphenyl)-*trans*-2-propenyl]-2(1*H*)pyridinone} and piperine {1-[5-(1,3)-benzodioxol-5-yl)-1-oxo-2,4-pentadienyl]piperidine}, components obtained from *Piper* species. The substances were tested for their cytotoxicity on the brine shrimp lethality assay, sea urchin eggs development, 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2*H*-tetrazolium bromide (MTT) assay using tumor cell lines and lytic activity on mouse erythrocytes. Piperine showed higher toxicity in brine shrimp (DL_{50} = 2.8 ± 0.3 μg/ml) than piplartine (DL_{50} = 32.3 ± 3.4 μg/ml). Both piplartine and piperine inhibited the sea urchin eggs development during all phases examined, first and third cleavage and blastulae, but in this assay piplartine was more potent than piperine. In the MTT assay, piplartine was the most active with IC_{50} values in the range of 0.7 to 1.7 μg/ml. None of the tested substances induced hemolysis of mouse erythrocytes, suggesting that the cytotoxicity of piplartine and piperine was not related to membrane damage.

Key words: Piplartine, Piperine, Cytotoxicity