

EFFECTS OF FLAVONOIDS ON THE ACTIVITY OF PROTEINS INVOLVED IN APOPTOSIS.

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Flavonoids are polyphenolic compounds found as integral components of human diets and they have been reported to have cytotoxic activity. Currently, interest is focused on cytotoxic compounds, which appear to exert effects on several key biochemical mechanisms involved in the pathogenesis of cancer and autoimmune diseases. The present study investigated *in vitro* induction of apoptosis by the flavonoids kaempferol and quercetin. This was evaluated through the nuclear morphology of McCoy cells using fluorescent stains, and the expression of proteins of the Bcl-2 family and was achieved by immunohistochemical staining analysis. Of the flavonoids studied kaempferol was shown to be the most toxic, which could be related to the absence of hydroxyl in position 3 of ring B. Quercetin treatment induces apoptosis in a dose-dependent manner, but the differentiation of the cell nuclear morphology induced by kaempferol could not be defined. The immunocytochemical expression demonstrates the induction of Bak in cells dosed with the lower concentrations of flavonoids (25 and 50 µg/mL) however the expression of Bcl-2 presents a significant difference between the different concentrations, demonstrating this to be dose-dependent. This work makes evident that flavonoids induce apoptosis and also suggested that induction may be mediated in part by functional inhibition of proteins of the Bcl-2 family.

Key words: Apoptosis, Bcl-2 protein, flavonoids.