

## **Gamma-linolenic acid induces apoptosis in B-chronic lymphocytic leukaemia cells in vitro.**

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Gamma linolenic acid (GLA) is cytotoxic to many types of human cancer cells. Most chemotherapeutic agents are cytotoxic by inducing apoptosis. We examined the apoptotic activity of GLA on purified B-cells isolated from patients with B-cell chronic lymphocytic leukaemia (B-CLL) and from normal individuals. GLA significantly increased the degree of apoptosis in B-CLL B-cells after 24 hours of culture. The mean percentage of cells undergoing apoptosis when cultured in medium alone (spontaneous apoptosis) was 20% (range: 7 to 31%) (n=25) and in the presence of GLA (5 microg-60 microg) was: 42%-95%. In the presence of GLA 5 microg/ml and dexamethasone the degree of apoptosis was 86% (range: 72 to 100%). GLA induced apoptosis in B-CLL B-cells at a higher level than that observed with normal B-cells at all lower concentrations tested 5, 10 and 15 microg/ml: P=0.045; 0.027 and 0.022, respectively. At 30 microg/ml of GLA, no significant difference in the percentage of cells displaying apoptosis between B-CLL and normal B-cells was observed (P=0.075). GLA induced apoptosis in B-CLL T-cells at both 10 and 30 microg/ml. The degree of apoptosis in normal T-cells with GLA was also significant at the higher concentration of 30 microg/ml. Interleukin 4 (IL4), a viability factor in B-CLL, and vitamin E, an anti-oxidant, protected B-CLL B-cells against GLA (20 microg/ml)-induced apoptosis. These results demonstrate that GLA induces apoptosis in B-CLL B- and T-cells cells in vitro and that they are more susceptible to GLA-induced apoptosis than normal peripheral blood B- and T-cells.