Zerumbone induces apoptosis in T-acute lymphoblastic leukemia cells

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Abstract
Zerumbone (ZER) is a potential anticancer natural compound, isolated from Zingiber zerumbet Smith. In this investigation, the anticancer properties of ZER were evaluated on cancer cells of T-acute lymphoblastic leukemia, CEM-ss. The results showed that ZER has cytotoxic effect against CEM-ss cells with an IC50 of 8.4±1.9 μg/ml (coefficient of variation < 30%). Comparatively, 5-fluorouracil (positive control), imposed an inhibitory effect on CEM ss cells with an IC50 of 1.94±0.06 μg/ml. Scanning electron microscopy (SEM) results revealed abnormalities such as membrane blebbing, holes and cytoplasmic extrusions, all of which are characteristics of apoptosis. In addition, ZER has increased the number of TUNEL-positive stain and the cellular level of caspase-3, the hallmarks of apoptosis, on treated CEM-ss cells. It could be concluded that, ZER was able to produce apoptosis on T-acute lymphoblastic leukemia, CEM-ss. The current findings suggest that ZER might be helpful for improving the usefulness of anticancer agents in the therapy of leukemia.