

### Zerumbone induces apoptosis in T-acute lymphoblastic leukemia cells

Siddig Ibrahim Abdelwahab, Ahmad Bustamam Abdul\* , Syam Mohan, Manal Mohamed Elhassan Taha,

Suvitha Syam, Mohamed Yousif Ibrahim, Abdelbasit Adam Mariod

UPM-MAKNA Cancer Research Laboratory, Institute of Bioscience, University Putra Malaysia, 43400 Serdang, Malaysia

#### article info

Article history:

Received 27 June 2010

Received in revised form 10 July 2010

Accepted 19 July 2010

Available online 13 August 2010

Keywords:

Apoptosis

Scanning electron microscope

Zerumbone

TUNEL assay

#### 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 IC<sub>50</sub> of 8.4±1.9\_g/ml (coefficient of variation < 30%). Comparatively, 5-fluorouracil (positive control), imposed an inhibitory effect on CEM ss cells with an IC<sub>50</sub> of 1.94±0.06\_g/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.