

UNIVERSITI TEKNOLOGI MARA

**MECHANISM OF APOPTOSIS ON PURE
POLYPHENOLS: ANALYSIS OF FLOW CYTOMETRY**

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**Dissertation submitted in partial fulfilment of the requirement for the
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APPROVAL SHEET

I hereby recommend that the thesis prepared under my supervision by Nurul Zuhanis Mohamed entitled “Mechanism of apoptosis on pure polyphenols : Analysis of flow cytometer” be accepted in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy from Faculty of Pharmacy, UiTM.

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ABSTRACT

The incidence of hepatocellular carcinoma is increasing in Malaysia and several new cases are being diagnosed every year. The purpose of this research was to find out the mechanism of apoptosis on pure polyphenols ; curcumin and gallic acid on HepG2 (hepatocellular carcinoma) cell line by using flow cytometry. HepG2 cell line was exposed to different concentrations of gallic acid and curcumin (IC₂₅, IC₅₀ and IC₇₅) in 24 and 48 hours. The outer membrane protrusion of phosphatidylserine which is typically inaccessible in viable cells, is detected by annexin V-FITC, and indicates the early stages of apoptosis. From the results, these polyphenolic compounds significantly induced apoptosis in HepG2 cells. Result also revealed that gallic acid have the ability to induce early-apoptotic cell death ($P < 0.05$) in HepG2 cells at lower concentration than curcumin. In conclusion, polyphenols which are curcumin and gallic acid are able to induce apoptosis on HepG2 cell line. This may be a beginning in the search for a new anticancer agent.