[PHAR05]
Active fraction (F16) from *Eurycoma longifolia* jack induces apoptotic-cell death of MCF-7 cells

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Extracts from the roots of *Eurycoma longifolia* have been shown to possess cytotoxic, antimalarial, antiulcer, antipyretic, and plant growth inhibition activities. However, to date no studies have been carried out to verify the direct cytotoxic activity of the extracts and fractions on the growth of human breast cancer cell line MCF-7. The present study investigates the effects of some extracts and their chromatographic fractions from the root of *E. longifolia* on the growth of a human breast cancer cell line MCF-7. Our data indicated that *E. longifolia* extracts and fractions exert a direct antiproliferative activity on MCF-7. The bioassay-guided fractionation from root resulted in the isolation of three active fractions, F5, F6, and F7, which displayed an IC_{50} of 6.17±0.38 µg/ml, 4.40±0.42 µg/ml and 20.00±0.08 µg/ml, respectively. The resultant from F7 purification, F16, exhibited a higher cytotoxic activity towards MCF-7, (IC_{50}=15.23±0.66 µg/ml) and a certain degree of selectivity against a normal breast cell line MCF-10A (IC_{50}=66.31±0.47 µg/ml). F16 significantly increased apoptosis in MCF-7 cells, as evaluated by the Tdt-mediated dUTP nick end labeling assay and nuclear morphology. Western blotting revealed down regulation of the expression of antiapoptotic protein Bcl-2. F16, however, did not affect the expression of the proapoptotic protein, Bax. To confirm that apoptosis was induced following F16 treatment, caspase-7 and PARP cleavage was investigated. The results proved affirmative.