EFFECT OF *CINNAMOMUM ZEYLANICUM* EXTRACTS ON GROWTH OF CELL LINE TRANSFERRED WITH *BCL-2*

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Abstract-This study has found that the growth of bcl-2 transfected hybridoma cell line was affected when exposed to various concentrations of cinnamon extracts ranging from 100ug/ml to 600ug/ml. Cells exposure to water extract (100-600ug/ml) led to the reduced in maximun cell number in batch culture. The cells number was reduced immediately when exposed to acetone extract at the concentration around 400ug/ml and 600ug/ml. The cell growth declined when exposed to ethanol extract of cinnamon, as lower as 100ug/ml.
Keywords: bcl-2, cinnamon extracts, antioxidants, phenolic compounds

Introduction-Cinnamon has been reported to have high antioxidant activity due to the phenolic compounds, CB-1 detected in its extracts. The studies on antioxidant properties of plants extracts are always being associated with human health products for various diseases such as inflammation, cancer and diabetes. In this study, the potential of the extracts using various solvents such as water, acetone and ethanol were evaluated. The *in vitro* model cell system used was hybridoma cell line that has been transfected with human bcl-2 gene initially to prolong its life span in culture for therapeutic production purposes. If cell immortalization activity of bcl-2 is suppressed by the extracts, it could become a potential candidate for cancer treatment and other various degenerative problems.

Objective: To study the effect of cinnamon extract on the growth of bcl-2 transfected cell line.

Methods-The extraction of C. zeylanicum was carried out as described in Taher 2005**.** *Cell lines and maintenance.* The TB/C3 cell line is an NS1-derived murine hybridoma transfected with bcl-2 carrier (TB/C3.bcl-2) as described in Simpson et. al. (1997). The hybridoma TB/C3 cells were maintained at 37 ^{0}C in RPMI 1640 medium supplemented with 5% dialysed FCS. The cells were routinely sub-cultured after 3 days from mid exponential growth phase. *In vitro assay on the effect of C. zeylanicum extracts.* The medium was added with an appropriate amount of extract from different solvent preparation to give the concentration of 100ug/ml, 200ug/ml, 300ug/ml, 400ug/ml and 600ug/ml. A suitable number of cells was added and resuspended in 10 ml RPMI 1640 medium supplied with 5% FCS to give an initial viable cell density of 2x10^5 cells/ml in 25 ml T-flask. Cells were incubated in CO2 at 37 ^{0}C. Samples were taken daily and count for viable cell number and viability.

Results -Using water extract, the maximum cell number reduced from around 8x10^5 cells/ml (100ug/ml and 200ug/ml) to around 4x10^5 cells/ml when exposed to 400ug/ml and 600ug/ml. In acetone extract, cell growing but maximum cell number reduced around 6-7x10^5 cells/ml when exposed to 100-200ug/ml acetone extracts. However, the cells number was reduced immediately when exposed to acetone extract at the concentration around 400ug/ml and 600ug/ml. The cells were unable to grow and proliferate when exposed to ethanol extract of cinnamon, as lower as 100ug/ml.

Conclusion- The maximum cell number and lifespan of bcl-2 transfected cell line were reduced when exposed to cinnamon water, acetone and ethanol extract. It could be due to the present of highly anti-oxidative phenolic compound CB1 (Taher 2005). At this moment we cannot establish the reason for cell death. Is bcl-2 expression have been suppressed? Is the cell cycle has been arrested? What is the mechanism of cell death?
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