

## ***In Vitro* evaluation of lipid accumulation inhibitory effect in 3T3-L1 cell and antioxidant enzyme activity of *Codonopsis lanceolata* using different solvent fractions**

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### **Abstract**

This study was conducted to evaluate the effect of anti-obesity and antioxidant enzyme activities *in vitro* by different solvent fractions from the roots of *Codonopsis lanceolata*. The cytotoxicity of different solvent fractions of *C. lanceolata* on 3T3-L1 preadipocytes were evaluated using the MTT assay, the rate of cell survival progressively decreased in a dose-dependent manner. Butyl alcohol fraction at 200 µg/mL exhibited a pronounced cytotoxic effect (75.73%) on 3T3-L1 cell comparable to that of the hexane fraction (79.82%), methylene chloride fraction (84.02%), ethyl acetate fraction (87.62%) and DW fraction (86.30%) at the same concentration. The Oil Red O solution was used to determine whether different solvent fractions of *C. lanceolata* induce adipocyte differentiation in 3T3-L1 preadipocytes. Confluent 3T3-L1 cells were treated with 50 µg/mL concentration of solvent fraction extracts from *C. lanceolata*. Inhibitory degree of lipid accumulation against solvent fraction extracts showed a significant level compared with the control. Both lipid accumulation and adipocyte differentiation showed relatively high effect on methyl chloride fraction. The root extract of *C. lanceolata* had the highest SOD enzyme activity of 84.5% in ethyl acetate partition layer and while water partition layer of diploid showed the lowest SOD enzyme activity of 57.9%. The activity of CAT, APX and POD showed a significantly higher activity in ethyl acetate partition layer compared with the other fraction. These results suggested that the roots of *C. lanceolata* may assist in the potential biological activity on anti-obesity and antioxidant capacity.

**Keywords:** *Codonopsis lanceolata*, 3T3-L1 preadipocyte cell, cytotoxicity, SOD, CAT, APX, POD

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