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In vitro cytotoxicity assay of *Sauropus androgynus* on human mesenchymal stem cells

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Abstract

*Sauropus androgynus* is a well-known Indonesian medicinal herb that is used extensively to increase human breast-milk production. However, many studies have also revealed side effects associated with bronchiolitis obliterans in Taiwan and Japan. The present study evaluated the in vitro toxic effects of *S. androgynus* on human mesenchymal stem cell culture derived from bone marrow

(hMSCs-BM). This is the first report of a cytotoxicity assay of *S. androgynus* extracts from Indonesia. After 72 hours of incubating cell cultures with varying concentrations of extracts (250–2500 mg L<sup>-1</sup>), cytotoxicity was assayed by the reduction of 3-(4,5-dimethyl- thiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) and reported in terms of cell viability. The apoptotic effects of the extract were determined by a terminal deoxynucleotidyl transferase-mediated dUTP-biotin nick end labeling (TUNEL) colorimetric assay. The *S. androgynus* methanol extract from East Java, Indonesia, was less cytotoxic to hMSCs-BM with an IC<sub>50</sub> of 2450 mg L<sup>-1</sup>, but it could inhibit cell viability via the apoptosis pathway. A sample extract of plants collected near Purwosari had the lowest hMSCs-BM viability percentage (37%), while the extract from plants collected near Surabaya Pusat had a cell viability of 75%. Further studies are required to investigate the metabolites in *S. androgynus* that are highly correlated with its toxic effects.

Keywords: in vitro cytotoxicity, *Sauropus androgynus*, human mesenchymal stem cells, apoptosis, safety assessment