Abstract

Hair loss is the common disorder that can be found among people. Potential agents that can regulate hair follicle development and stimulate hair growth are of interest in the cosmeceutical field of research nowadays; however, most of the hair growth promoting agents still have unpredictable results and may cause side effects or toxicities for long term using. Alternative agents especially those originated from natural sources have become attractive due to less toxicity and more acceptable for daily used. This study aims to investigate the proliferative effect of *Artocarpus lakoocha Roxb.* extracts on human hair follicle cells which are dermal papilla (DP) cells and human keratinocytes (HaCat) cells. Five different extracts of *Artocarpus lakoocha Roxb.* were assigned as O1, O2, O3, D4 and D5. Cytotoxicity test of the extracts on HaCat show that O1, O2 and O3 significantly inhibit cell proliferation at >20 μg/ml at 24h post treatment, while D4, D5 significantly inhibit cell proliferation at >400 μg/ml at 24h post treatment, these indicates the lower toxicity of D4, D5 when compared to O1, O2 and O3. Moreover, D4 and D5 significantly increase HaCat cell proliferation at 10, 20, 50 and 100 μg/ml. The extracts at sub toxic concentration (0.5, 1, 2.5, 5, 10 μg/ml for O1, O2, O3, and 0.5, 5, 50, 100, 200 μg/ml for D4, D5) were investigated against DP cells. After incubated for 24, 48 and 72h, none of the extract shows the increase DP cell proliferation. Co-culture of DP and HaCat cells also exposed to the sub toxic concentration of the extracts, after 24 and 48h post treatment the cell viability were assessed, none of the extract shows the increase in co-culture cell proliferation. Since extract D4 and D5 can increase HaCat cell proliferation, further investigation on the effect of these two extracts on HaCat cell cycle has been performed. After incubated the cells with D4 and D5 at concentration 20 and 50 μg/ml for 24h, cells were stained with propidium iodide (PI) to assess DNA content with flow cytometry. When compare the cell cycle accumulation by the ratio of the cell in the G2/M phase between the treated cell and untreated control, the G2/M ratio of the cells treated with D4 at 50 and 20 μg/ml were 2.48 and 1.94, respectively. Accordingly, the G2/M ratio in D5 treated cells at the concentration of 50 and 20 μg/ml were 1.84 and 1.63, respectively. These results suggested that the extract D4 and D5 of *Artocarpus lakoocha Roxb* can increase the hair follicle keratinocytes proliferation and may be the potential candidates for further study in another hair growth models.