

Effect of Miswak extract on reversing effect of phenytoin on fibroblast growth

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Phenytoin is a commonly used antiepileptic drug. One of its side effects is gingival overgrowth with a prevalence of 50%. This problem carries both hygiene and cosmetic impact on patients. Miswak, a commonly used natural stick for cleaning the teeth, was reported to have anti-inflammatory as well as antibacterial activities. The aim of this study is to examine the effect of Miswak extracts on fibroblast over-growth that is induced by application of phenytoin. Miswak extract can reduce gingival overgrowth caused by phenytoin. The study was conducted in a cell culture lab. Miswak sticks (128.6 g) were extracted using a Soxhlet extractor for one week. The extracted liquid was dried using a rotavapor to obtain a concentrated extract of miswak.

Phenytoin caused toxicity to fibroblasts. There was a direct relationship between the concentration of the phenytoin used and the number of living cells (toxicity). Miswak extract used alone caused minimal toxicity for cells, the 25% (1.36mg/ml) extract showed improved cell growth. When miswak and phenytoin (20µg/ml) were used together, miswak extract helped in decreasing the toxicity of phenytoin. The 25% of the extract, which equals 1.365mg/ml, had the best result in reversing phenytoin toxicity (-4.3%).

Miswak extract has the potential in reversing fibroblast cell toxicity induced by phenytoin. Further studies are needed to determine the mechanism of this effect, like studying the effect of miswak extract on the level of IL1 β and PGE2 production by HGFs.