### Abstract

**Introduction:** Anti-inflammatory agents allow proper control and regulation of the process of inflammation leading to less tissue damage evidenced by minimal clinical symptoms. The powdered dried fruits of *Rhus coriaria* L. (somagh) have long been used in Iran as an effective topical medicine to relieve painful gums and also reported to be a powerful antimicrobial, antifungal and anti-bleeding agent. The anti-inflammatory capability of somagh against expression of cytokines, IL-1β and TNF-α, was investigated.

**Method:** Aqueous and ethanolic extracts of somagh were tested for potential down-regulation of IL-1β and TNF-α transcripts in lipopolysaccharide-induced macrophage cultures in vitro. Levels of expressed cytokine transcripts were determined by real-time quantitative PCR. Phytochemical analysis of the extracts was examined by liquid chromatography and mass spectrometry (LC-MS). The putative roles of the major organic molecules identified where investigated by the molecular suite AutoDock. Biocompatibility of the extracts was also ascertained by PrestoBlue assay on normal human dermal fibroblasts (HDFn). 

**Results:** Significantly down-regulated levels of both IL-1β and TNF-α were observed (p<0.05) using both aqueous and ethanol extracts starting from the lowest 10% concentration compared to controls. LC-MS chromatogram revealed major alkaloid phytochemicals majority of which significantly bind to the DNA binding site of NF-kB transcription factor. Both aqueous and ethanol extracts were also non-cytotoxic to HDFn.

**Conclusions:** These findings suggest the anti-inflammatory property of somagh as confirmed by down-regulation of cytokines in vitro and in silico binding and inhibition of NF-kB. The bioactive phytochemicals therein can be promising novel immunomodulatory drugs for dental and medical applications.

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**Keywords:** *Rhus coriaria*, anti-inflammatory, cytokines, NF-kB

**Presentation:** Poster