

عنوان مقاله:

Antibacterial and antibiofilm activities of *Prangos acaulis* Bornm. extract against *Streptococcus mutans*: an in silico and in vitro study

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خلاصه مقاله:

Introduction: *Streptococcus mutans* is a principal pathogenic agent in biofilm formation on the teeth surfaces and subsequently development of dental caries and plaque. Therefore, currently introducing novel anti-bacterial and anti-biofilm agents, especially plant based materials are highly regarded. This study was planned to investigate in silico and in vitro antibacterial activities of *Prangos acaulis* extracts against *S. mutans* in single and biofilm forms and their mutagenicity in Ames test. **Methods:** The anti-bacterial and anti-biofilm effects of methanol extracts from various parts of *P. acaulis* were evaluated using disk diffusion and microtiter assay. Moreover, the potential mutagenicity of the extracts was investigated using Ames test. In addition, dominant constituents of *P. acaulis* that reported in previous studies were subjected to an in silico analysis. The ability of selected phytochemicals to inhibit the glucosyltransferase was evaluated using molecular docking method. **Results:** All tested extracts especially root extract had significant antibacterial activity against the single form of *S. mutans* and inhibited biofilm formation without any mutagenic activity. The results also confirmed that three compounds consisting of ar-curcumene, d-limonene and alpha-pinene had strong and appropriate interactions to glucosyltransferase. **Conclusion:** This study indicated that *P. acaulis* has potent antibacterial and biofilm inhibition activity against *S. mutans* and can be good candidate for in vitro and in vivo studies with the aim of introducing novel inhibitors of dental caries development.

کلمات کلیدی:

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