

# Antioxidant and Antimicrobial Activities of Saponin fractions from *Paronychia argentea* and *Spergularia marginata*

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**Abstract:** *Paronychia argentea* and *Spergularia marginata* are two indigenous plants belonging to the family of Caryophyllaceae which includes a large number of species rich in saponins with various pharmacological properties. *Paronychia argentea* and *Spergularia marginata* used in Moroccan traditional medicine locally known as "hiddourt Raii" and "Boughlamsahraoui" respectively, were evaluated in this study for their bioactive fractions saponins. *P. argentea* is commonly used in Moroccan popular medicine as aperitif and diuretic. However, *S. marginata* is used in traditional medicine for the treatment of female infertility as well as aphrodisiac. The crude saponins extracted from *Paronychia argentea* aerial parts and roots of *Spergularia marginata* were subjected to column chromatography on silica gel column using solvent gradients. Sixteen fractions were collected from crude saponins of *P. argentea* and ten fractions were collected from crude saponins of *S. marginata*. Fractions were visualized using TLC silica gel plates. The chromatogram was developed with chloroform: ethyl acetate: methanol: water (60:40:8:1 v/v/v/v). The crude saponins as well as the obtained fractions were tested for their antioxidant and antimicrobial activities. The crude saponins were screened against Gram-negative, Gram-positive bacteria and candida using the disc diffusion method, the minimum inhibitory concentration (MIC) and the minimum bactericidal concentration (MBC). The results of MIC assay showed that both saponin extracts were active against the majority of *Candida* strains and Gram-positive bacteria. Six fractions from *P. argentea* and five from *S. marginata* were found to be more effective against tested microorganisms when compared to the crude saponin extracts and other fractions. The antioxidant activity was evaluated by DPPH autochemistry, DPPH scavenging activity and reducing power assay. The IC<sub>50</sub> values were calculated for both tests. The obtained results showed that twelve fractions from *P. argentea* and six fractions from *S. marginata* were active for DPPH assays. However, ten fractions from *P. argentea* and six fractions from *S. marginata* were active for reducing power assay. The present study suggests that the studied fractions possess significant antibacterial and antioxidant activities. However, further work should be performed on the purification and identification of the antioxidant and antimicrobial components of these saponin fractions.

**Keywords:** antioxidant, antimicrobial, *Spergularia marginata*, *Paronychia argentea*, saponins, fractions.