

Antimicrobial Activity and Toxicity Effect of *Adiantum Capillus-Veneris*

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Medicinal herbs are important natural resources that can be used against various infections. *Adiantum capillus-veneris* has been used in traditional medicine for centuries against various infections. The objectives of the present study were to study the antibacterial activity against *Staphylococcus aureus* and the toxicity effect of *A. capillus-veneris*. Leaf extraction of *A. capillus-veneris* was prepared using the Soxhlet apparatus with absolute methanol as solvent and then concentrated using a rotary vacuumed evaporator. Using a stock solution of 100 mg/mL four different concentrations of crude extracts were prepared (50 mg/mL, 25 mg/mL, 12.5 mg/mL, and 6.25 mg/mL) for the antibacterial test. Well diffusion method was employed to study the antimicrobial activity and inhibitory zone diameter was also measured. Absolute methanol was used as negative control. For the toxicity test crude extract was reconstituted using distilled water. A stock solution of 1000 µg/mL was prepared and 500 µg/mL, 100 µg/mL, 10 µg/mL and 1 µg/mL solutions were prepared using this solution. Zebrafish (*Danio rerio*) embryos were used as toxicological model and their coagulation, lack of somite formation, lack of detachment of the tail and lack of heart beat was used as the lethality indicators. The results indicated that methanol extract of the *A. capillus-veneris* have antibacterial activity against *S. aureus* and the Minimum Inhibitory Concentration (MIC) was 12.5 mg/mL (One way ANOVA, $p < 0.05$ and Dunnett's test by 95% confident level). According to the Probit analysis the lowest LD 50 value received for toxicity test was 102 µg/mL after 96 hours by 95% confident level. According to the results it could be concluded that leaf extracts of the *A. capillus-veneris* shows antibacterial activity against *S. aureus* at a very low concentration and they could be toxic with the increasing time duration.

Keywords: *Adiantum capillus veneris*, *Staphylococcus aureus*, MIC, Zebrafish embryo, LD 50