



EFFECT OF *ABELMOSCHUS ESCULENTUS* EXTRACT ON FIBROBLAST WOUND HEALING

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ABSTRACT

Introduction: The wound healing process is a complex biological phenomenon involving the stages of inflammation, cellular proliferation, and tissue remodeling (Wilkinson; Hardman, 2020). Despite the availability of healing agents and adjuvant support, the search for new, more effective therapeutic agents and wound dressings that accelerate this process is highly relevant. Thus, medicinal plants with pharmacological potential attract significant research interest (Serenio et al., 2022). In this context, *Abelmoschus esculentus* (L.) Moench, popularly known as okra, has been reported in the literature for its biological properties, including anti-inflammatory and antioxidant effects (Romdhane et al., 2020; Xiong et al., 2021). However, the potential of this plant species in the wound healing process is still not widely understood. **Aim:** This study aims to evaluate the wound-healing properties of the aqueous extract of *Abelmoschus esculentus* (EAE) on fibroblasts *in vitro* wound healing model. **Methods:** A human fibroblast cell line (HFF-1 - BCRJ) was used. Cell viability was assessed using the MTT colorimetric assay, in which cells were treated with EAE at concentrations of 4, 16, 64, and 256 µg/mL for 48 hours. Cell morphology was also analyzed using crystal violet staining after the same treatment period. To investigate cell migration capability, a wound healing assay was conducted, where fibroblasts were pre-treated with 4 µg/mL of mitomycin-C for 2 hours as a cell proliferation inhibitor. Subsequently, a scratch was made in the cell monolayer, and treatment was carried out with 10 or 100 µg/mL of EAE for 48 hours. Results were statistically analyzed with ANOVA followed by Bonferroni's post-test using Prism software version 8.0, with data considered significant at $p < 0.05$. **Results and Discussion:** The results showed that EAE treatment did not alter cell viability at any of the tested concentrations. Morphological analysis indicated that cells retained their typical morphology, with an elongated shape and rounded nuclei, similar to the control group cells exposed only to the culture medium. Regarding the wound healing assay, treatment with the extract accelerated fibroblast migration, resulting in an 11% higher closure rate than the control group after 48 hours of treatment, only at the concentration of 100 µg/mL, suggesting a promising effect of the extract. These findings are consistent with those of Sipahi et al. (2022), who investigated the wound-healing effects of *Abelmoschus esculentus* extract in both *in vitro* and *in vivo* experimental models. Furthermore, the presence of flavonoids in our extract, as previously described in the literature, supports the findings of this study. **Conclusion:** Preliminary results suggest that flavonoids present in the aqueous extract of *Abelmoschus esculentus* have the potential to modulate fibroblast migration, a crucial cell type in tissue repair that warrants further exploration. Due to the promising effects observed with this species, it is believed to represent a potential therapeutic alternative for treating hard-to-heal wounds.

Keywords: Natural product, wound healing, Okra, cell migration.