

This study was conducted to evaluate the burn wound healing potential of injectable hydrogels prepared from silk sericin, with the plant extract of *Withania coagulans*. On the dorsal surface of mice, burn wounds were induced by using a hot metallic rod having a diameter of 6mm. Various formulations of injectable hydrogels at a concentration of 4% silk sericin, 0.5% *W. coagulans*, 1% *W. coagulans*, 2% *W. coagulans*, and 4% silk sericin combined with 0.5% *W. coagulans*, 4% silk sericin containing 1% *W. coagulans*, and 4% silk sericin with 2% *W. coagulans* were injected at the periphery of the wounds after every two days. Duration of wound healing, percent wound contraction and histological examination were the three main contributors to assess the efficacy of these hydrogels. Additionally, serum levels of various biochemical parameters were measured, including pro-inflammatory cytokines, the anti-inflammatory cytokine, tissue inhibitor of metalloproteinases, and matrix metalloproteinases. All hydrogel treatment groups showed efficacy, but the formulation containing 4% silk sericin and 2% *W. coagulans* produced the best results. This combination achieved nearly complete wound healing by day 17, with a 91.77% wound contraction. Furthermore, this group demonstrated the lowest levels of pro-inflammatory cytokines (tumor necrosis factor- $\alpha$ , Interleukin-6) and matrix metalloproteinases (MMP-2, MMP-9), along with the highest levels of anti-inflammatory cytokines (Interleukin-10) and tissue inhibitor metalloproteinases. In conclusion, injectable hydrogels infused with silk sericin and *W. coagulans* extract exhibit significant potential for burn wound treatment due to their superior healing and regenerative properties, surpassing the effectiveness of commercially available ointments such as Quench (Positive Control).