Novel Applications of Native Sonoran Desert Plants (NSDP), Year 3 Study

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Antibiotic resistance is one of the most urgent public health issues. To address this problem, this study investigated the possible applications of Native Sonoran Desert Plants (NSDP) against antibiotic resistance. A tablet binder was created using extract of honey mesquite (Prosopis glandulosa) leaves obtained using a rotary evaporator and tablets of Ampicillin and different concentrations of Prosopis glandulosa extract were produced using a manual tablet molder. Tablets with carboxymethylcellulose were used as a control. Antimicrobial assays (Kirby-Bauer and Area Coverage Analysis) were performed to test the efficiency of the tablets. Toxicity assays were also conducted. Data were analyzed using R- studio, Microsoft Excel, and Image J. The results showed that Prosopis glandulosa increased the antibiotic effects of Ampicillin (t-test, $p<0.05$). Hence, Prosopis glandulosa can be used as a potential tablet binder. The bioplastic infused with NSDP extract demonstrated great antimicrobial effects against E. coli (Larrea- 94% inhibition, Prosopis- 69% inhibition). This research presents potential applications of NSDP on mitigating antibiotic resistance.

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