Examining Antibacterial Properties of Native American Medicinal Plant Extracts against Streptococcus pyogenes ATCC 19615

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Three years of preliminary research suggested that Southwestern Native medicines may possess antibacterial properties against Streptococcus pyogenes ATCC 19615 (S. pyogenes), the bacteria responsible for “Strep throat”, and significant morbidity and fatalities worldwide annually. With antibiotic resistance posing an increasing threat, it is imperative that novel, yet reliable, alternatives to pharmaceutical-grade antibiotics be identified. This study examined the antibiotic potential of isolated plant ingredients of these Native medicines. Plant extracts from Native medicines were created from Prosopis velutina (Velvet Mesquite), Clinopodium douglasii (Yerba Buena), Cinnamomum cassia (cinnamon), and Lewisia rediviva (Bitterroot). It was hypothesized that only Clinopodium douglasii and Cinnamomum cassia would kill S. pyogenes on both Mueller Hinton agar (MHA) using the Kirby Bauer method, and Mueller Hinton broth (MHB) using the Minimum Inhibitory Concentration (MIC) test. Extracts were tested against S. pyogenes using the Kirby Bauer method on MHA. Using this method, S. pyogenes was not found to be susceptible to any of these extracts. Using the MIC test, which was performed by adding decreasing amounts of plant extracts in MHB with 100 µl of S. pyogenes, two extracts were found to have antimicrobial properties. Clinopodium douglasii was found to have a MIC of .625 µg, and the Lewisia rediviva MIC was 0.31 µg. These results were unexpected and novel, as no published literature could be found on Lewisia rediviva possessing antimicrobial activity against S. pyogenes.

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