Rethinking Honey: A Promising Investigation of Synthetic Honey as a Bacteriostatic Salve

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Water-borne skin-infection pathogens pose a significant threat to rural and occupational coastal environments, particularly in the fishing industry. While bee honey has been found effective against infections, it has encountered complications concerning availability and standardization. Synthetic honey may serve as an alternative solution. Seven Alaskan botanical sources were manufactured as synthetic honeys, as well as a sugar-solution control. They were then submitted to susceptibility testing against three common skin infections – Staphylococcus aureus, Pseudomonas aeruginosa, and Serratia marcescens – using flocculated suspension and serial dilution in test tubes. After incubation, McFarland readings were taken to measure the amount of microbial growth. The sugar solution showed significant inhibition at 1:2 dilution against S. aureus, as well as treatments 1, 4, 5, 6, and 7. At the 1:2 dilution, treatments 1, 3, 5, 6, and 7 showed significant inhibition against P. aeruginosa, and treatments 2, 5, 6, and 7 showed significant inhibition against S. marcescens. At all dilutions greater than 1:2, the test bacteria showed resistance to both treatments and the sugar solution. Subcultures from all treatment dilutions were then performed using agar plates, and all subcultured plates yielded >100,000 colony count. The results demonstrated that synthetic honeys manufactured from Melilotus albus, Mertensia paniculata, and Rosa acicularis exhibited significant bacterial inhibition against both Gram+ and Gram- skin infection; however, its antimicrobial action is bacteriostatic. Because of the commonality of marine subsistence and commercial activities in Alaska, synthetic honey may prove valuable as a preliminary stopgap as the prevalence of water-borne infections continues.

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