Investigating the Effect of Floral Source on the Antimicrobial Action of Synthetic Honey

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The medical field is desperately seeking natural antimicrobials to solve the problem of antibiotic resistance. Honey inhibits bacterial growth and is already being used in clinical settings. Like all natural remedies, honey has limitations: declining bee populations, the increasing price of honey, and the cost and time needed to create honey are obstacles for its use as a clinical antibiotic. Synthetic honey, a sugar solution with floral components steeped in it, may be a replacement for honey as a clinical antibiotic. During previous tests I demonstrated synthetic honey's antibacterial qualities, but I wondered if varying the floral source would affect antimicrobial effectiveness. I manufactured synthetic honeys from 17 different Alaskan floral sources, plus a sugar-solution control. I made isotonic saline serial dilutions of each and inoculated each dilution with E. coli K-12 and tsb to act as a bacterial nutrient. I incubated the tubes for 24 hours, and then took the McFarland reading to measure the bacterial growth that had occurred in each dilution of each treatment. The data showed a wide range of antibacterial effectiveness across the different synthetic honeys compared to the sugar solution, and all but one were significant at $p < 0.05$. This suggested that varying the floral source used to create synthetic honey affects its antimicrobial effectiveness. The knowledge that certain floral sources can enhance synthetic honey's antimicrobial effects lends more support for its use as an alternative for medical honey, and as an inexpensive, locally available replacement for clinical antibiotics in remote locales.

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