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Non-induction of resistance amongst *Salmonella Typhi* strain passaged through sub lethal dose of Beri honey

Mahrukh Ghafoor, Muhammad Amir Zaheer, Usman Qamar, Sidra Saleem and **Abdul Hannan**
University of Health Sciences, Pakistan

Introduction & Aim: Resistance to conventional anti-typhoid drugs is well documented and the recent emergence of fluoroquinolone resistance has made it very difficult and expensive to treat typhoid fever. As the therapeutic approach becomes even more limited, it is crucial to probe into non-conventional modalities. In this perspective, honey is a promising nominee for skirmishing antimicrobial resistance. Antimicrobial activity of honey is well established against variety of bacteria. It contains a broad range of antibacterial compounds that act synergistically at multiple sites, thus possibly making bacterial resistance unlikely. In this study, the ability of honey to resist the occurrence of resistance under conditions that induce resistance in antibiotics was analyzed.

Methods: Minimum inhibitory concentrations (MICs) of two antibacterials, Ciprofloxacin and Beri honey were determined against *Salmonella Typhi* using broth dilution technique. The isolates thus obtained were then exposed and passaged through serially increasing the sub lethal concentrations of the two in test tubes, till the concentrations reached the original minimum inhibitory concentrations. After successive passages, the MICs of both bacterial inhibitors against *Salmonella Typhi* were determined again using broth dilution technique.

Results: After exposure to the sub lethal dose, the MIC of Ciprofloxacin against *Salmonella Typhi* rose up to eight times. The minimum inhibitory concentration of honey remained unchanged from its original value even after exposure to sub lethal doses.

Conclusion: The emergence of extensive resistance to antibiotics has arguably occurred due to their misuse and overuse but also as a natural phenomenon. The results in this study show that sub lethal concentrations of the extraordinary natural antimicrobial agent, Beri honey, do not favor the development of resistant bacterial phenotype. Here we demonstrate that *Salmonella Typhi* did not develop resistance against honey, as it did against Ciprofloxacin. Further exploration of the molecular and cellular basis of this behavior is the next line of research.

maxaheer@hotmail.com