

## Abstract

Honey is a natural nutritious product that should be free from bacterial contamination in particular pathogenic bacteria. To guarantee the safety and usefulness of such natural nutritious products there is a need of assessing their quality both in the parameters of microbial contamination as well as chemical contamination. In the present study, comparative bacterial quality assessment of five commercial honey products i.e. processed and five unpackaged honey products i.e. unprocessed, available in Punjab province of Pakistan were investigated. Results revealed that unprocessed honey products harbored more bacteria than the processed ones. Out of total samples, 10 pathogenic bacteria were isolated and studied. Only 1 was from processed samples, while the remaining 9 were from unprocessed honeys. The bacterial isolates included both gram positive and gram negative bacteria. These bacterial contaminants were identified as *B. cereus*, *B. anthracis*, *B. weihenstephanensis*, *C. botulinum*, *C. acetobutylicum*, *C. septicum*, *P. mirabilis* and *M. odoratimimus* which are common soil and water dwelling bacteria. Intrinsic human pathogens *S. aureus* and *P. aeruginosa* were also identified. The high number of pathogenic bacteria in unprocessed honey, especially the gram negative bacteria, indicated secondary contaminations of honey by poor handling. The processing of honey as well as the storage processes account for the presence of these bacteria. Optimum conditions for bacterial isolates were determined. They were also subjected to antibiotics and plant extracts susceptibility. The most effective antibiotic was found to be ofloxacin and the most effective plant extract was green tea. Although most of these bacteria are in indolent forms and they can barely survive in honey due to its many properties. Still there is a need for caution especially when giving honey to children under the age of one year and in its use in wound treatment. As when honey is diluted in milk, water or any other medium there is a chance that these bacteria can become active and cause illness. The unprocessed honey may taste better, but when it comes to bacterial contamination it is not safe.