

RESTRAINING MULTI-DRUG RESISTANT BACTERIA THROUGH MEDICINAL PLANTS

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Antibiotics kill bacteria or prevent them from multiplying. Antibiotic resistance among bacteria occurs when an antibiotic loses its ability to control and kill bacterial growth. Antibiotic resistance is a survival trait of bacteria. Some bacteria develop resistance to many antibiotics becoming multidrug resistant (MDR) strains. New antibiotics are required to treat infections caused by MDR bacteria. The World Health Organization has recently announced the urgent need to develop new antibiotics to combat 12 MDR bacterial pathogens. However, many pharmaceutical companies are terminating their research and development endeavours on new antibiotics. Combination therapy using more than one antibiotic is a viable option to manage drug-resistant bacteria. Other approaches such as vaccines and bacteriophages will also be

useful to maintain the efficacy of current and new antibiotics. Another strategy is to restore or enhance the activity of antibiotics against drug-resistant bacteria by using the antibiotics together with compounds that inhibit resistance mechanisms. Some plant compounds have shown considerable resistance-modifying activities *in vitro*. Crude extracts of some medicinal plants have also been effective in potentiating the activity of commonly used antibiotics against drug-resistant bacteria. The use of plant compounds and their combinations, together with common antibiotics, is a powerful strategy to mitigate the problem of antibiotic resistance. The potent combinations of plant compounds and antibiotics determined from *in vitro* experiments could be assessed by *in vivo* studies to determine the clinical relevance of such combinations.