

# Antimicrobial Activity of Spices †

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**Abstract:** Spices not only enhance the taste of our food but also increase their shelf life. During cooking and grinding, essential oils of spices are released into the medium, responsible for the taste and antimicrobial properties. The samples of our choice for the investigation were Clove and Black pepper, two of the most commonly used spices in Indian cuisine. Methanol, Ethanol, Acetone, and Aqueous extract were prepared using mortar and pestle, which were subjected to agar well diffusion against some of the known pathogens, which are *S. aureus*, *B. subtilis*, *K. pneumoniae*, *E. coli*, *A. niger*, and *P. notatum*. Methanol extract of Black pepper showed effectiveness against *S. aureus*, *B. subtilis*, and *K. pneumoniae*, whereas Ethanol and Acetone extract showed activity only against *S. aureus* and *B. subtilis*. Methanol, Ethanol, and Acetone extract of clove inhibited all the test organisms, whereas the Aqueous extract inhibited only the fungal strains. Phytochemical analysis of Black pepper extracts revealed the presence of Saponins and Glycosides as the compounds responsible for the antimicrobial property. Whereas in the case of clove, Flavonoids and Resins were detected to be responsible for the antimicrobial property. Alkaloids, Glycosides, Steroids, and Terpenoids were common in Methanol, Ethanol, and Acetone extract. Infrared spectroscopy was used to confirm the presence of these compounds. Hence, it can be concluded that these are the compounds responsible for the samples' antimicrobial properties, and they can be further investigated for the development of nutraceuticals.

**Keywords:** phytochemical analysis; infrared spectroscopy; Alkaloids; Glycosides; Steroids; Terpenoids; Saponins; Flavonoids; Resins.

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## **Conflicts of Interest**

The authors declare no conflict of interest.