**INVESTIGATION OF PHYTOBIOACTIVE COMPOUNDS OF TRADITIONAL SPICES BY FTIR SPECTROSCOPY**

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Abstract: Phytobioactive compounds are the secondary metabolites and bioactive compounds present in herbs, spices, and medicinal plants. Due to the high cost and side effects of synthetic drugs, spices become a good therapeutic alternative against many diseases, as they are better tolerated in the human body, have low toxicity, low cost, and cultural acceptance. These are enriched with numerous bioactive compounds such as phenolic compounds, flavonoids, sulfur-containing compounds, alkaloids, phenolic diterpenes, etc. which gives them great bioactive properties such as anti-viral, anti-fungal, anti-bacterial, anti-microbial, anti-oxidant, etc. These phytochemicals present in spices are being examined using chemical methods such as GC-MS, LC-MS, etc. but these techniques are costly, complex, and time-consuming. Therefore, we have proposed an experimental analysis to identify the secondary metabolites present in some common spices used traditionally, namely, turmeric, cinnamon, cloves, and black pepper with a very simple, fast, and effective phytochemical analysis technique, that is, Fourier Transform Infrared Spectroscopy (FTIR Spectroscopy). FTIR is almost a non-destructive technique that works by analyzing the interaction of infrared light with the molecular vibrations of a sample, providing information about the functional groups and chemical bonds present in the sample The results showed the presence of phytobioactive compounds: eugenol, caryophyllene, cinnamaldehyde, piperine, etc in the selected spices. This analysis will encourage the use of spices as a replacement for harmful chemical drugs.