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## *In vitro* and *in silico* studies of methanol extract of *Bridelia stipularis* on *S. aureus* and *E. coli*

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Bacterial resistance to contemporary antibiotics is an emerging problem in allopathy. The pursuit of a novel therapeutic agent with superior activity to conventional antibacterial agents has piqued the interest of pharmaceutical scientists in recent decades. It has been established by several scientists that plant extracts are the source of many valuable phytochemicals that may have a variety of medicinal activities. Some of the compounds present in *Bridelia stipularis* (BS) are reported to have anti-cancer and anti-microbial activities. In the present work, we examined the phytochemicals present in the methanol extract of BS using GC-MS analysis. The extract was screened for anti-bacterial activity against *S. aureus* and *E. coli* in DMSO using the well-cut method. The extract's activity was comparable to that of standard antibiotics such as erythromycin, streptomycin, cefotaxime and cloxacillin. *In silico* investigations of the phytochemicals that have the highest proportion in the extract were conducted with the structural proteins of *S. aureus* and *E. coli*. Among the identified compounds, steroidal and sulphonyl hydrazone molecules showed high binding affinity on the enzymes of *E. coli* and *S. aureus*. Binding analysis of highly stable receptor-ligand complexes were discussed in the article.

**Keywords:** *Bridelia stipularis*, Transferase, Oxidoreductase, Phosphotransferase, Docking