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Antimicrobial and anticancerous profile of *Callistemon lanceolatus* (Bottle brush)

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The bioactive horizon of plants has been the least explored of all the natural sources. The present study is an attempt to find out the bioactive potential of *C. lanceolatus* leaves. Of the different organic solvents tested, ethyl acetate extract of *Callistemon lanceolatus* leaves revealed maximum antimicrobial potential against various pathogenic microorganisms as it had broad-spectrum activity in terms of inhibition zones ranging from 15-27 mm with Staphylococcus aureus (27.33mm) and Klebsiella pneumonia (24.66mm) being the most sensitive among gram positive and gram negative bacteria, respectively. Among various phytoconstituents, Cardiac glycosides were the most abundant, closely followed by tannins and phytosterols while saponins were least abundant. Cardiac glycosides followed by phytosterols showed maximum antimicrobial potential as compared to others phytoconstituents where an inhibition zone of 14-36mm. The antimicrobial potential of partially purified phytoconstituents was more prominent against gram-positive where MRSA, *S. epidermidis* and *S. aureus* were the most sensitive. Encouragingly, both ethyl acetate extract and partially purified phytoconstituents showed lower minimum inhibitory concentration as compared to gentamicin which ranged from 0.5-7µg/ml. Further, evaluation of the antimicrobial action by viable cell count studies revealed their microbicidal behavior of both ethyl acetate extract as well as partially purified phytoconstituents. In addition to this, the antiproliferative studies on HeLa cell lines promised the anticancer aspect of the extract as well as partially purified phytoconstituents, where the antiproliferative potential of the phytoconstituents aspect of the extract surpassed even curcumin in terms of efficacy. They were neither mutagenic nor cytotoxic as revealed by Ames and MTT assay. These findings signify the importance of *Callistemon lanceolatus* leaves as a potential candidate to be explored for its lead bioactive metabolites.

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