



ChemTech

International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.13 No.03, pp 322-332, 2020

Phytochemical Analysis and Anti-microbial Studies of Leaf Extract of *Terminalia arjuna* using Spectroscopic Methods

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Abstract : From time immemorial plants have been used as potent therapeutic agents to treat various ailments in the Siddha and Ayurveda streams of medicine. Plants are rich sources of flavonoids, alkaloids, terpenoids and other related polyphenols. One such important plant used for treating heart ailments is *Terminalia arjuna*. The bark of this plant plays a vital role as cardiac tonic. It also possesses antimicrobial, cytotoxic and antidiabetic properties. The phytochemical activity of the secondary metabolites present in the bark of *T.arjuna* has been reported widely. But, the medical uses of leaf extract of the plant have seldom been reported. In this work, the ethanolic extract of leaf of *T. arjuna* has been analysed for the presence of different phytochemicals using FTIR, UV-Visible and GC-MS spectroscopic methods. The various functional groups present in the leaf extract have been identified initially using FTIR and UV-Vis spectra of leaf extract. Next, GC-MS studies revealed the complete structure of the twelve major phytoconstituents that were present in the leaf extract. In the next stage of the study, the therapeutic effect of the extract as potent anti-bacterial and anti-fungal agent has been studied. The presence of a flavonoid and ester groups in the leaf extract as revealed by the GC-MS analysis and the potential anti-fungal and anti-bacterial activity of the extract shows that leaf extract of *Terminalia arjuna* has a great potential to be used as a therapeutic agent.

Keywords : Anti-microbial activity – FTIR – GC-MS – phytoconstituents - *Terminalia arjuna* - UV-Visible spectrum.

B. Anita/ International Journal of ChemTech Research, 2020,13(3): 322-332.

DOI= <http://dx.doi.org/10.20902/IJCTR.2019.130329>
