

***Combretum pincianum* Hook has Multiple Antibacterial Activities**

Uzma Kanwal and Asia Karim
GM College, Gulshan-e-Madina, Faisalabad, Pakistan

According to the world health organization almost 80% of Asian and African population utilizes traditional medicines for primary health care (WHO, 2008). As the herbal medicines have natural origin, people consider them non toxic and use them more frequently. Usually the local practitioners and peoples have good knowledge about the medicinal importance of plants growing in their area, which can promote the use and production of plants (Majeed *et al.*, 2011). But there should be more studies on the medicinal uses of plants, to improve the relation between human health and plants. *Combretum* genus is one of the healthy benefiting plant groups due to its positive activities against disease causing agents. The *Combretum* genus falls in family Combretaceae, has nearly 250 species, which are mostly found in tropic of Asia and Africa (Sheng-Liang and Sylvia, 2010). One of its members, *Combretum paniculatum* has strong antiviral activity against Human Immunodeficiency Virus HIV-1 and HIV-2 (Asres *et al.*, 2001). The acetone-mediated extraction from its leaves possess strongest antiviral activity against HIV-1 than other tested subjects. Furthermore, the antimicrobial activities of other members of this genus are also reported (Asres *et al.*, 2006; Fyhrquist *et al.*, 2002). Thus the members of this genus should be explored according to their health benefiting properties.

Adejuwon *et al.* (2011) investigated the antimicrobial efficacy of a member of this genus, *C. pincianum* Hook. The research team analysed the antimicrobial activity of its leaves extract at a concentration of 25 mg mL⁻¹ against fourteen bacterial isolates in agar media. They observe the inhibited growth of *Bacillus anthracis*, *B. cerus*, *Clostridium sporogenes*, *Escherichia coli*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *P. fluorescens*, *Staphylococcus epidermidis* and *Streptococcus faecalis*. Thus its extracts possess antibacterial activity against 8 out of 14 tested bacteria, which inhibit the bacterial growth in the zone between 10 and 20 mm. Moreover, its extracts have antibacterial activity against these bacteria at different concentration, e.g., it inhibits *E. coli* and *P. Aeruginosa* at 0.32 mg mL⁻¹ while *S. faecalis* and *S. epidermidis* at 25 mg mL⁻¹ concentration. Its extracts have comparable antibacterial activity with Streptomycin, a synthetic antibacterial compound. They further proposed that the antibacterial activity of *C. pincianum* is supported by its phytochemicals, as it has tannins, saponins and alkaloids. As tannins have the ability to interfere the enzyme activity due to their protein binding properties (Evans, 2002; Prescott *et al.*, 2005), so it may also able to inhibit the bacterial growth. Likewise the saponins and alkaloids also have antibacterial activities against many bacteria (Kumar *et al.*, 2010; Mandal *et al.*, 2005). Thus the application of *C. pincianum* extracts can inhibit many bacteria in concentration dependant manner. But it did not inhibit the growth of all tested bacteria, which might be due to the low concentration of herbal extract.

Thus it can be said that the *Combretum* genus has many valuable plants, which can help the humanity suffering from microbial diseases. The scientific investigation of *C. pincianum* antibacterial activity by Adejuwon *et al.* (2011) provides a basic support to promote its use in antibacterial drug formation. As its extracts can inhibit the bacterial growth at different concentration depending upon the bacterium tested. Its extracts have tammins, saponins and alkaloids, which might be responsible for its antibacterial properties. But there is need of further investigation on the phytochemical distribution of this plant, to have better understanding of its antimicrobial activity. This may also help in the cheaper availability of antibacterial drugs.

REFERENCES

- Adejuwon, A.O., M.A. Bisi-Johnson, T.M. Obuotor and O.A. Agboola, 2011. Bioactive compounds and antimicrobial efficacy of the extracts of *Combretum pincianum* Hook. J. Med. Plants Res., 5: 3561-3563.
- Asres, K., F. Bucar, T. Kartrig, M. Witvrouw, C. Parnecouque and E. De Clercq, 2001. Antiviral activity against human immunodeficiency virus type 1 (HIV-1) and type 2 (HIV-2) ethnobotanically selected Ethiopian medicinal plants. J. Phytother. Res., 15: 62-69.
- Asres, K., A. Mazumder and F. Bucar, 2006. Antibacterial and antifungal activities of extracts of *Combretum molle*. Ethiopian Med. J., 44: 269-277.
- Evans, W.C., 2002. Pharmacognosy. 15th Edn., W.B. Saunders, Philadelphia, PA., USA., pp: 332-334.

- Fyhrquist, P., L. Mwasumbi, C.A. Haeggstrom, H. Vuorela, R. Hiltunen and P. Vuorela, 2002. Ethnobotanical and antimicrobial investigation on some species of *Terminalia* and *Combretum* (Combretaceae) growing in Tanzania. *J. Ethnopharmacol.*, 79: 169-177.
- Kumar, P., R.P. Bhatt, L. Singh, S.H. Chandra and R. Prasad, 2010. Identification of phytochemical content and antibacterial activity of *Juniperus Communis* leaves. *Int. J. Biotechnol. Biochem.*, 6: 87-91.
- Majeed, A., M. Kanwal, S. Shaukat, R. Javed and R. Ilayas, 2011. Exploration of ethnomedicinal values of imperative plants of District Gujrat, Pakistan. *Middle-East J. Sci. Res.*, 7: 397-400.
- Mandal, P., S.P.S. Babu and N.C. Mandal, 2005. Antimicrobial activity of saponins from *Acacia auriculiformis*. *Fitoterapia*, 76: 462-465.
- Prescott, L.M., J.P. Harley and D.A. Klein, 2005. *Microbiology*. 6th Edn., McGraw-Hill Co., New York, London.
- Sheng-Liang, L. and M.P. Sylvia, 2010. *Combretum* in Flora of China. Science Press, Beijing, China, pp: 309-316.
- WHO, 2008. Traditional medicine. WHO Fact Sheet No. 134. <http://www.who.int/mediacentre/factsheets/fs134/en/index.html>.