

## Chemotaxonomy of *Tinospora cordifolia* male and female type plants/parts using HRMS techniques their biological activity and identification of markers for gender distinction

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**T**inospora cordifolia plant is known for its many medicinal properties and stem of *Tinospora cordifolia* plant is mainly used in ayurvedic preparations. The different class of biologically active compounds such as alkaloids, diterpenoids lactones, glycosides, steroids, phenolics, sesquiterpenoids, polysaccharides and other aliphatic compounds are reported in the *Tinospora cordifolia* plant. The direct analysis in real time (DART) mass spectrometric technique is very much effective in chemical profiling of natural products as solid or liquid, leaf or stem or any other samples can be directly investigated without prior sample treatment. In present work we have tried to figure out the presence of important medicinal compounds in the male and female *Tinospora cordifolia* plant parts stem and leaf by profiling through the new direct analysis in real time mass spectrometric technique and authentication of compounds by Q-TOF LCMS and MSMS techniques. Leaf and stem of male as well as female *Tinospora cordifolia* plant is subjected under investigation is described in present paper. The results show that the plant type male and female could be easily differentiated using DART MS data and chemical profiling clearly indicate the presence of characteristic compound in each part of *Tinospora cordifolia* plant under investigation. Some medicinally important compounds namely Jatrorrhizine, Magnoflorine, Tembetarine, Tetrahydropalmatine, Columbin, and  $\beta$ - Sitosterol are found in both male and female plant by their molecular formula and exact mass measurement. PCA with multivariate analysis clearly discriminate between male and female of *Tinospora cordifolia*. PC1 vs PC2 plot which explains 63.87% information with the help of nine marker peaks shows cent percent discrimination between male and female plants of *Tinospora cordifolia*. Comparative Chemotaxonomy of all the plant parts for male and female using QTOF LCMS, MS/MS (ESI and APCI) and DARTMS with their biological activity will be discussed during the seminar. This is important for quality control and efficacy of herbal drugs.

### Biography

Brijesh Kumar has completed his PhD from Dr RML Avadh University Faizabad UP, India. He is the Principal Scientist in Sophisticated Analytical Instrument Facility (SAIF) division of CSIR-Central Drug Research Institute, Lucknow, India a premier drug research organization. He has published more than 40 papers in reputed journals. His current area of research is application of Mass Spectrometry tools (DARTMS/Q-TOF LCMS/4000 Q Trap LCMS) for qualitative and quantitative evaluation of known and unknown small molecules for quality control and authentication of Indian Medicinal Plant/parts. He is also involved in identification of marker compounds using statistical software.

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