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## Molecular profiles of diploid and triploid cytotypes of *Acorus calamus* Linn

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*Acorus calamus* (Family: Acoraceae) commonly known as sweet flag is a plant widely used in Indian System of Traditional Medicine since times immemorial. Four cytotypes, viz., diploid ( $2n=2x=24$ ), triploid ( $2n=3x=36$ ), tetraploid ( $2n=4x=48$ ) and hexaploid ( $2n=6x=72$ ) are found world-wide, of which, only two cytotypes, viz., diploid and triploid cytotypes are found in Manipur, North-East India. Different cytotypes show great morphological variabilities and wide variations in chemical composition of essential oils. These cytotypes, as evident from literature survey, are extensively used for their anti-spasmodic, anti-diarrheic, carminative, anti-helminthic, anti-depressant and CNS anxiolytic properties, as tonic, stimulant and aphrodisiac, for treating rheumatism, toothache and respiratory ailments. The crude extract can prevent acrylamide-induced limb paralysis, decreased glutathione content and glutathione transferase activity, and increased dopamine receptor in corpus striatum. Bioactive compounds present in *Acorus calamus* are acorin,  $\alpha$ - and  $\beta$ -asarone, asaryldehyde, caryophyllene, isoasarone, methyl isoeugenol and safrol. The content of  $\beta$ -asarone (carcinogenic) is found to vary with ploidy level. Triploid accessions contain 7-7.8%  $\beta$ -asarone as against 73-88% in tetraploid accessions. Since the diploid cytotype is characterized by the absence of  $\beta$ -asarone, it has attracted considerable interest in pharmaceutical industry. We have studied diploid and triploid cytotypes, and developed clonal propagation protocols as well as microrhizome technology. *Acorus calamus* accessions across 19 different populations have been investigated. RAPD and ISSR molecular markers have been employed for revealing genetic variability of the species. Amplification of genomic DNAs using 32 primers yielded 238 bands of which 84 bands are polymorphic revealing 35.3% polymorphism. The average polymorphic information content obtained are 0.19 and 0.22 respectively. Marker index (RAPD 0.078; ISSR 0.106) and resolving powers (RAPD 0.22; ISSR 0.26) indicated that ISSR markers are more efficient than RAPD markers.

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