Abstract

Cannabis sativa trichomes are glandular structures primarily accountable for the biosynthesis of cannabinoids, the naturally active compounds unique to this plant. To our knowledge, the majority of prior metabolite profiling studies on C. sativa that have been published have focused on the plant's flowers and leaves. In this study, NMR based metabolite profiling was applied for monitoring the variances among various varities present in different regions of Pakistan. On the basis of NMR data, identified various classes of main and secondary metabolites using previously available literature on NMR-based Cannabis phytochemical research as well as two metabolite databases, HMDB and MMCDB, and were confirmed by J-resolved 2-D spectra. Cannabinoids such as CBN, CBD, CBC and Δ^9-THC were present in C. sativa cultivars under study showed pronounced activity against bacterial strains used in the research work. The very slight differences in phytochemical profiles of samples were observed resulted from environmental conditions, geographical distribution, and soil nutrient profile, and all of these factors influence metabolite profile variation. The cultivars under study contain the four primary cannabinoids (Δ^9-THC, Δ^8-THC, CBD and CBN) which are both recreational and medicinally legal in the Netherlands. The chemovars used for the research work showed promising results and should be tested in clinical trials before being approved in Pakistan.