Black Pepper Leaf Oil Mass Spectrometric Profile Variations in the Southern Western Ghats of India

Abstract

Piper nigrum leaves were collected from five locations from Kerala within a radius of 150 km, altitudinal variance of 1000m and annual rainfall variance of 1400mm. The extracted Piper nigrum leaf oil was profiled using a GC-MS, Beta Caryophyllene was the only constituent that was present in all the five locations, of which the highest concentration was noted in the high altitude region of Idukki. Micro-climate plays a vital role in the production of these constituents, as samples from the low range areas of Idukki and high range areas of Idukki did not have similar oil profiles. High amounts of Alpha Pinene were present in the sample from the low range region of Idukki whereas in the sample from the high range region of Idukki showed extremely high concentrations of Elemol. There is also great variation in concentrations of chemicals like Beta Gurjunene, Copaene and Germacrene D. This shows that the variance of micro-climate and micro-environmental factors like soil plays a significant role in the concentrations of certain phytochemicals in the Piper nigrum leaf volatile oil profile. Black pepper has recently been geographically indicated (GI tagged). The variations found in the leaf oil profile of the piper nigrum could help in reducing the abuse of the GI system.
References


Index Terms

Computer Science  Applied Sciences

Keywords

Piper nigrum, Black pepper, Leaf oil, Geographic Indication, Oil profile.