A preliminary survey and chemical profiling of wild ginger species in Kadamaian, Kota Belud, Sabah

ABSTRACT

A preliminary survey of the diversity of gingers (Zingiberaceae) was conducted in Kadamaian, Kota Belud from 14th to 19th October, 2019. Wild ginger species is utilized widely as one of the most important material in traditional medicine among indigenous people of Sabah. However, few of these plant species have been studied for their chemical constituents and beneficial properties. In order to investigate the compound composition, the essential oil from Etlingera brevilabrum, Alpinia nieuwenhuizii and Hornstedtia havilandii were screened. The essential oil was obtained from leaves, stems and rhizomes of the plant through hydro-distillation and analysed for their chemical composition through Gas Chromatography-Mass Spectrometry (GC-MS). The result of this study indicated that the chemical constituents of all three parts for all species are similar; all have terpenoids (monoterpene and sesquiterpene), aldehyde, hydrocarbon, ketone and alcohol in the essential oil extracts. GC-MS analyses of the oils led to the identification of 35 compound constituents from the leaves, stems and rhizomes of E. brevilabrum, which is the highest. Meanwhile, A. nieuwenhuizii displayed 34 chemical compositions from all parts (leaf, stem and rhizome) of the plant. H. havilandii showed the lowest number of volatiles from all plant parts (24 compounds). Monoterpene is dominant in all wild ginger studied, except for rhizome of E. brevilabrum. On the contrary, E. brevilabrum showed sesquiterpene as the most abundant compound in its composition. This shows that the volatile oil composition of wild ginger species is extremely variable. This study provides preliminary key chemical information for evaluating the quality of local wild gingers in Kadamaian, Kota Belud, Sabah.