Chemical composition and mosquito repellency of essential oil of Conyza newii propagated in different geographical locations of Kenya

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Abstract. Previously, essential oil of Conyza newii (Asterale: Asteracea, Oliv. & Hiern) growing in the northern part of West Pokot (35°E, 1°N) of Kenya was shown to be highly repellent [RD50 = 8.9 × 10−5 mg/cm2, 95% confidence interval (CI)] to Anopheles gambiae s.s. Fumigant toxicity of the oil to the mosquito was also demonstrated. The major constituents of the oil were found to be monoterpenoids, including (S)-(−)-perillyl alcohol, (S)-(−)-perillaldehyde, geraniol, (R)-(−)-limonene, trans-β-ocimene and 1,8-cineol. In this study, the chemical composition and repellency of essential oils of the plant seedlings collected from West Pokot (35°E, 1°N) and propagated in seven different geographical regions of Kenya [West Pokot (35°E, 1°N), Kilome (37°E, 1°S), Naivasha (36°E, 0°), Webuye (34°E, 1°N), Nyakach (34°E, 0°), Kericho (35°E, 0°) and Nairobi (36°E, 1°S)] were compared. There were significant variations (P < 0.01, 95% CI) in the relative proportions of the six constituents and this was reflected in the repellency of the essential oils (P < 0.01, 95% CI). Higher repellency of the oil was associated with greater proportions of (S)-(−)-perillyl alcohol, (S)-(−)-perillaldehyde and geraniol, and lower repellency was associated with an increased proportion of (R)-(−)-limonene. The results suggest significant epigenetic (chemotypic) variations in the repellency and composition of C. newii essential oils growing in different regions of Kenya.

Key words. Chemotypes, epigenetic variations.