

Physicochemical composition of hydro-distilled essential oil from coriander (*Coriandrum sativum* L.) seeds cultivated in Pakistan.

ABSTRACT

This experiment describes the physicochemical composition of the essential oil derived from the seeds of coriander (*Coriandrum sativum*) cultivated in Pakistan. Hydrodistilled essential oil content from coriander seeds was found to be 0.15%. The physicochemical properties namely density (25°C), refractive index (25°C), acid value, ester value, and optical rotation (25°C) determined for the essential oil were found to be 0.8310, 1.4592, 4.0, 23.7, and +11.5 g/cm³, respectively. A total of 48 chemical constituents representing 90% of the essential oil tested were identified using Gas chromatography-flame ionization detector (GC-FID) and Gas chromatography-mass spectroscopy (GC-MS). Linalool with contribution of 69.60% was found to be the principal constituent. Other important components identified were: geranyl acetate (4.99%), γ -terpinene (4.17%), α -pinene (1.63%), anethol (1.15%) and p-cymene (1.12%). The analyzed essential oil mainly comprised of oxygenated monoterpene hydrocarbons (80.83%), followed by monoterpene hydrocarbons (8.00%), sesquiterpene hydrocarbons (0.47%) and oxygenated sesquiterpene hydrocarbons (0.35%). Overall, the physicochemical attributes and chemical profile of the tested essential oil from Pakistan were reasonably comparable with those investigated for coriander seed essential oils from other regions of the world suggesting its potential for functional foods and cosmetics applications.

Keyword: Hydrodistillation; Coriander seed; Essential oil; Physicochemical attributes; Gas chromatography-mass spectroscopy (GC-MS); Linalool; γ -terpinene; Oxygenated monoterpenes.