

Research Paper :

## Comparative studies of the major components present in the essential oil of Indian Cumin (*Cuminum cyminum* L.) from different origin

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### ABSTRACT

The hydro-distilled Cumin seed oil obtained from local market of Kanpur and Delhi was analysed by GC and GC-MS, which led to the identification of 18 compounds representing 97.8 and 98.4 % respectively of the total oil.  $\gamma$ -terpinene the main constituent was found in the range of 26.3% followed by  $\beta$ -pinene (13.1-12.9), p-cymene (21.8-17.9%), cuminaldehyde (25.1-18.0%) and 2-carene-10-al (7.2-16.3%). The oil yield was 3.9 and 3.7 % (v/w).

**KEY WORDS :** Comparative studies, Indian cumin, Essential oil

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Cumin (*Cuminum cyminum* L.) of family Apiaceae; Umbelliferae commonly known as Zeera occupies an important place among condiments because of the dried yellowish to greyish brown seeds. The plant is native to the Mediterranean regions and North Africa. In India, It is mainly cultivated in Rajasthan, Gujarat and Madhya Pradesh. It is a very popular spice in America, Burma, India and Indonesia. Indian cumin finds extensive use in food, beverages, liquors, medicines, toiletries and perfumery. The absolute is superior to the oil in flavouring. Cumaldehyde, the chief constituents of cumin oil is used in perfumery. Cumin oil is being used as an antispasmodic, carminative and antibacterial agents<sup>1-2</sup>.

There are many reports available in composition of cumin oil reported by different workers. The essential oil of the seeds of *Cuminum cyminum* L. from china was isolated by hydrodistillation in a yield of 3.8%. The chemical composition of the essential oil was examined by GC and GC-MS; 37 components, representing 97.97% of the oil, were identified. Cuminal (36.31), cuminic alcohol (16.92),  $\gamma$ -terpinene (11.14), safranal (10.87), p-cymene (9.85) and  $\beta$ -pinene (7.75%) were the major components.<sup>3</sup> Zhu *et al.* analysed an essential oil of seeds of *Cuminum cyminum* L. cultivated in China. The major constituent were  $\beta$ -pinene (6.80), p-cymene (22.28),  $\gamma$ -terpinene (1.39) and cuminaldehyde (43.48%).<sup>4</sup> In 1999 Rahman *et al.* examined the composition of cumin seed

oil and they found  $\beta$ -pinene (9.8), p-cymene (16.4),  $\gamma$ -terpinene (8.1), Cuminaldehyde (37.4%) as major component.<sup>5</sup>

Beis *et al.* studied the effect of particle size, batch size and steam distillation rate on the yield of oil from ground Turkish cumin seed. They found that reducing the particle size of the charge resulted in an increase in the oil yield. Experiment was carried on pilot scale and composition of oil was analysed by GS-MS. During this study the major constituents were  $\gamma$ -pinene (10.22),  $\alpha$ -phellandrene (1.60), p-cymene (5.51),  $\beta$ -terpinene (17.25), cuminaldehyde (27.60%) as major component.<sup>6</sup> Jalali *et al.* characterize the essential oil components of Iranian cumin oil by GC-MS.  $\gamma$ -terpinene, 2-methyl-3-phenylpropanal, myrtenal, p-cymene and  $\beta$ -pinene,  $\gamma$ -terpinene,  $\alpha$  and  $\beta$ -phellandrene and myrcene as major constituents.<sup>7</sup>

### EXPERIMENTAL METHODOLOGY

The cumin seeds were identified by Taxonomy Division of Dayanand Girls, P.G. College, Kanpur. The semi-crushed seeds were hydro distilled in a Clevenger type apparatus for 7 hrs yielding oil in 3.9 and 3.7% (v/w). The oils were dried over anhydrous sodium sulphate and stored in a sealed glass vials in refrigerator.

### GC and GC-MS analysis:

Quantitative analysis of the essential oil of cumin