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Nutraceuticals from Coriander Oil

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Abstract

Coriander *(Coriandrum sativum)* is a well known herb widely used in spice, medicine and culinary. The essential oil of coriander contains chemical compounds which exhibits various activities like antifungal, antimicrobial and antioxidative which are widely used in perfumery, candy making, aromatherapy and soap making. Coriander essential oil claims to have calming effects in gastric and intestinal pains. We are exploring the antimicrobial and antibacterial efficacy of Coriander and increasing its shelf life. Enhancing the presence of linalool in the essential oil could replace the synthetic chemicals in detergent making and effective as natural antifungal agent in order to preserve food with high lipid content. Coriander essential oil can serve as a source material for synthetic production of flavoring agents. Exploring the nutraceutical potential of coriander oil can address the problems of drug resistance and it can be effective against the pests.

Key words: Coriander oil, antioxidants, antimicrobial, linalool.

Introduction

Coriander *(Coriander sativum)* is an annual herb that is from the *Umbelliferae* family. It is named after a Greek word koris meaning bug. The unripe fruits have smell like bedbugs. But when ripe, seeds have a distinctive spicy aroma. Green coriander also called as Chinese parsley and have been most commonly used for flavoring in culinary use, all over the world. It is seasonal oliferous herb. Coriander is native to Mediterranean region and grown all over the globe. Such herbs contains aromatic substances that increase flavoring character. Coriander (*Coriander sativum)* has a good aromatic odor. Generally fresh plant parts are used in culinary use. But dried fruit is used as a spice.

Essential oils of such herbs and their main components are found to be the product of secondary metabolites of plants, have many applications in ethno medicine, food flavoring and preservation as well as in the fragrance and

pharmaceutical industries (Fabian et al. 2006). Coriander seed oil is one of major essential oils in the market today. Fresh Coriander herb oil has fatty acids, flavonoids, carotenoids as well as aromatic seasoning. It contains aliphatic aldehydes, linalool, monoterepenes and monoterpenols.

Coriander fruit is also employed for preparation of either the steam distilled essential oil or the solvent extracted oleoresin. The essential oil can be fractionated to get the linalool (usually 60-70 percent), which can be used as raw material for synthetic production of flavoring agents. Widely used in aromatherapy, perfumery, soap making and food flavoring. The oil is also fungicidal and bactericidal. Coriander oil can be useful to refresh and uplift the mind. It can help for mental fatigue, migraine, tension and nervous weakness. It has warming effects on the stomach and relieves wind and cramps, while revitalizing the glandular system. Useful in rheumatism and arthritis pain as well as muscle spasms. In this study, we are exploring the nutraceutical potential of coriander oil. Aromatic herbs and spices widely used in foods like in bakery, dairy and meat products (Reddy *et al*., 2005; Shahsavari *et al*., 2008). Coriander fruit has relaxing effect in digestive system, hence widely used as aroma agent in perfumery, cosmetics and pharmaceutical industries.

Materials and Methods

The study was done in the experimental laboratory of Department of Biosciences in the Noida International University. Harvest was held 108 days after sowing of seeds. Clevenger apparatus was used for the hydro distillation. Once in a time 100g of seeds were taken for the treatment in the round bottom flask with distilled water. Hydro distillation was carried out for three hours consecutively. The essential oil obtained from the seeds was analyzed in gas chromatograph and physical testing was done according to the British Pharmacopeia standards. (Mclafferty & Stauffer,1989)

Figure 1. Coriander herbs after one month of maturation.(Archna Tiwari)

Figure 2. Coriander flowering after maturation (Archna Tiwari)

Results and Discussion

Essential oil synthesis in coriander needs high temperature and light requirements, is more intense under optimal climatic conditions (Telci et al.2006a). Result of chemical composition of Coriander fruit oil volatile in nature found to have high linalool content.

Table 1. Percentage composition of chemical compounds of coriander oil based on GC peak areas.

Compound	Percentage
Linalool	73.84%
α-Pinene	3.57%
Limonene	2.20%
γ-Terpinene	3.53%
Geraniol	0.12%
Camphor	5.44%
Geranylacetate	2.80%

(Figueriedo et al .2004) studied the chemical composition of the Coriander essential oil and found the similar chemical compounds but found different percentage. Identified as linalool(77.48%)%), γ-terpinene (4.64 %), α-pinene (3.97 %), limonene (1.28 %), geraniol (0.64 %) and α-decenal (0.16 %). It was Coriander essential oil from Brazil when compaired to the result of this work. Similarly Pino & Borges (1993, 1999) have also studied the chemical compounds of essential oil grown in several geographical regions of Russia, Italy, Albania and India. They reported the different percentage of chemical compounds of the oil from each region. The major compounds were linalool, γ-terpinene, camphor and α-pinene, and the highest percentages were found in Russia and Albania. In further studies carried out to evaluate chemical composition of coriander essential oil produced in Russia and

Bulgaria, Derbesy & Uzio (1993) and Frank et al. (1995) have found very close values for its major compounds: linalool (65.0 % and 68.4 %), α-pinene (3.0 % and 2.5 %) and limonene (2.0 % and 1.3 %). The results obtained by several authors compared to the ones from this work, show that these compounds present variation, which may be related to climate and soil condition, harvest season and plant development. The future applications includes enhancing the presence of linalool in the essential oil could replace the synthetic chemicals in detergent making and effective as natural antifungal agent in order to preserve food with high lipid content. Coriander essential oil can serve as a source material for synthetic production of flavoring agents and it can be effective against the pests.(Jadon et al 2013)

References

[1] D Fabian, M Sabol, K Domaracka´ and D Bujna´kova´ (2006), Essential oils – their antimicrobial activity against Escherichia coli and effect on intestinal cell viability. Toxicol In Vitro 20, pp.1435–1445.

[2] Telcil , E Bayram , B Avici (2006a) Changes in yield, essential oil and linalool contents of *Coriandrumsativum* varieties (var. *vulgare* Alef. and var. *microcarpum* DC) harvested at different development stages. Europ. J. Hortic. Sci. pp.71 (6): 267–271

[3] V Reddy, A Urooj and A Kumar (2005) Evaluation of antioxidant activity of some plant extracts and their application in biscuits. Food Chemistry pp. 90: 317-321.

[4] N Shahsavari, M Barzegar, M A Sahari and H Naghdibadi (2008), Antioxidant activity and chemical characterization of essential oil of *Bunium persicum*. Plant Foods for Human Nutrition pp.63: 183-188.

[5] J Pino ,P Borges , B Roncal (1993), Compositional differences of coriander fruits oils

[6] from various origins. Die Nahrung, pp.37. 119-122.

[7] J A Pino, P Borges (1999), Los components volatiles de las especias. VII. Cilantro.

[8] Alimentaria,pp. 301:77-78.

[9] F W Mc Lafferty, D Stauffer (1989), The wiley/ NBS Registry of mass spectral data.

[10] New York: John Wiley & Sons, pp.1037.

[11] M S Jadon, K Singh and H N Sharma (2013), Efficiency of coriander extractand essential oilagainst stored product pest *Trogoderma granarium*, Ind J Biol Stud Res Vol. 2 (2), pp.121-128