



Review of Traditional and Phytochemical Investigations of Essential oil Yielding Plant *Pelargonium Graveolens*

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Abstract:

World population relies on plant based traditional system of medicine for their primary healthcare. A number of herbs belonging to the genus *Pelargonium* for example *P. graveolens* plant is noted for their medicinal benefits in traditional system of medicine. These are very rich sources of various phytochemicals such as phenolic acids, flavones, flavonols derivatives.

These plants derived essential oils which are used in perfumery cosmetics, soaps, creams, aromatherapy products exhibit good antioxidant activity.

Keywords: Aromatherapy, healthcare, essential oil, traditional

Introduction:

Plants have great potential uses especially as traditional medicine and pharmaceutical drugs. Since ancient times plants have been richest source of medicine. A large proportion of world depends on the traditional medicine because of the scarcity and cost of effectiveness of medicine.

Medicinal plants has been used for centuries as remedies for human disease and have great application in the field of agriculture, human and veterinary medicine, food and perfume industry (Butles, 2004).

Indigenous plants have been the traditional source of raw material for the manufacture of medicine (Gupta, 1994). Despite of the advantages of the synthetic, combinatorial chemistry and molecular modeling, medicinal plants remain an important source of new drugs and drug leads.

The focus on plant research has increased all over the world and a large body of evidences has been collected to show the immense potential of medicinal plants used in various traditional systems.

In fact, modern pharmaceuticals still contains at least 25% drug derived from plants (Olaleye et al., 2006). During past several years, there has been growing interest among the usage of various medicinal plants for the treatment of various ailments.

A number of herbs belonging to *Pelargonium* are noted for their medicinal benefits in traditional systems of medicine (Prajapati et al., 2003) and is famous for its essential oil which is one of the 20 th essential oil in the world with the wide application in perfumery, cosmetics and flavor industry (Douglas, 1969). A lot of medicinally important attributes have been assigned to *Pelargonium graveolens* etc.

The common name geranium has been erroneously used to refer to a plant that should correctly be called *Pelargonium*.

Recently China is the main producer of Geranium oil other major producers are India, Egypt, Morocco, Reunion, and the former Soviet Union but extensive industries of local importance in India.



Geranium was introduced in India in the beginning of twentieth century. Rose-scented Geranium (*Pelargonium*) is found in various parts of India. The crop is grown in the Tamilnadu, Bangalore, Yercoud, Nilgiris, and Palani hills (Kodaikanal) Andhra Pradesh and agro climatic condition of North Indian plains at Lucknow.

Traditional Properties:

In India three cultivars of *Pelargonium* namely Algerian (Hemanti), Bourbon (Bipuli) and Egyptian (Kunti) are cultivated commercially (Rao and Bhattacharya, 1992). The present world production of geranium oil is approximately 200 tones. India produces less than 20 tones of geranium and hence import is required (Navale and Mungse, 2002).

Pelargonium contains in all 24 species. Many species are aromatic and in particular *P. capitatum*, *P. gravelolens* and *P. radens* are used in cultivation programme. Traditionally plants have been the sources of raw materials manufacture of medicines (Gupta, 1994). *Pelargonium* spe. are widely used by traditional healers for its curative and palliative effect in the treatment of diarrhoea, wounds, gastroenteritis, haemorrhage, kidney and bladder disorders (Watt and Breyer, 1962).

Traditionally roots have been used for a multitude of ailments both the rhizome and herb have been used for different purposes. Since ancient times for treat malaria, inflammation, abdominal and uterine disorder.

They were also used in decoctions to wash patient suffering from fever (Watt and Breyer, 1962, Lis Balchin, 1996) and also directly chewed and powdered and mixed with food. Traditional method of using *Pelargonium* roots is to boil the tubers in milk (Latte and Kolodziej, 2004).

The root extracts have been shown to have antibacterial, antifungal, antitubercular activity which is used for treatment of coughs and tuberculosis.

The leaves were used to treat wounds, abscesses and externally used for treating neuralgia, throat infections and various skin diseases, such as ringworm, ulcers and rashes (Vernin et al., 1983).

In folk medicine *Pelargonium* was internally used as styptic for haemorrhoids, peptic and duodenal ulcers. It is commonly useful for childhood ailments such as chicken pox, measles and mumps. They are also useful in treating menstrual and menopausal problems, breast congestion and fluid retention (Watt and Breyer, 1962, Hutchings et al., 1996).

Pelargonium derived geranium monoterpene oil(s) maintains balancing effects of constipation, insomnia, restlessness, nervousness, anxiety, worry, high blood pressure, anger, frustration, high cholesterol, slow to lose weight (Lis-Balchin 1997, Buchbauer 1992). It is used in perfumery, cosmetics, soaps, creams, aromatherapy products (Herbert and Oliver, 2003) and has potential to immune modulating effects on natural killer cells (Standen et al., 2006).

Pelargonium essential oil show good antioxidant activity on bacterial and fungal organisms (Kolodziej, 2003).

Geranium oil relieves congestion especially for breast tissue, improves circulation, helpful for detoxification, overcoming addiction, hemorrhoids indigestion (Lalli et al., 2008).

Phytochemical Properties:

Phytochemicals as plant components with discrete bio-actives towards animal biochemistry and metabolism are being widely examined for their ability to provide health benefits.



Research in Pelargonium is intensively focused on the chemical composition of the essential oils (Williams and Harborne, 2002) located in glandular hairs on both leaf surfaces (Vermin et al., 1983). The essential oil composition of the Pelargonium graveolens was significantly affected by crop duration and oil with best Citronellol ; Geraniol ratio was obtained from January planted crops (Verma et al., 2010).

Chemical analysis have led to the characterization of about 65 metabolites including phenolic acids, cinnamic acids, tannins, flavonoids, and cumarins in P. graveolens (Robert and Philip, 2003). In P. graveolens whole plant extract yield high quality of essential oils (Butles, 2004, Kolodziej, 2000). Thirty two components constituting 99.23% of geranium essential oil having been identified. The major components were Citronellol (29.90%), Transgeraniol (18.03%), Isomethane (5.44%), linalool (5.13%), geranyl acetate (4.52%), geranyl butyrate (2.53%), geranyl tiglate (2.50%) and germacrene (2.50%).

Conclusion:

Pelargonium graveolens is an aromatic medicinal plant belonging to the family geraniaceae. The chemical components of essential oil were investigated. The GC-MS analysis of the essential oil revealed 42 compounds. Linalool Z, Citronellol, Geraniol were identified as major compounds.

Thus the essential oil and organic extracts of P. graveolens possess phytochemical properties and is therefore potential source of active ingredients for food and pharmaceutical industry as well as Aromatherapy.

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