

Economic uses of Eryngo/Culantro (*Eryngium foetidum* Linnaeus): A review

P. Bijaya Devi^{1,3}, Panna Deb^{2,3} and H. Birkumar Singh⁴

¹Krishi Vigyan Kendra, Utlou, Manipur, India

²Centre for Biodiversity & Natural Resource Conservation, Assam University, Silchar, Assam, India

³Department of Ecology & Environmental Science, Assam University, Silchar, Assam, India

⁴Corresponding author: CSIR-North East Institute of Science & Technology, Branch Lab, Lamphelpat, Imphal, Manipur, India. E-mail: hbirumars@yahoo.com

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Abstract

Eryngo, *Eryngium foetidum* Linnaeus of Apiaceae is indigenous to tropical South America and Caribbean Islands but grows in many warmer parts of the world mainly in Asia. It is an annual herb that is extensively used as spices and medicine. The plant is used preferably in cooking of meats and fishes and not limited to vegetable cuisine only. Since ages, the plant has been reported to be traditionally used in the treatment of various ailments and diseases viz. asthma, epilepsy, cough, paralysis, arthritis, pneumonia, burns, hypertension, constipation, stomach ache, worms, infertility, snake-bite, diarrhoea, malaria, convulsion of children, etc. Skin whitening, anthelmintic, anti-inflammatory, analgesic, anti-convulsion, anti-carcinogenic, anti-diabetic, anti-helminthic, anti-clastogenic, anti-parasitic properties of eryngo have been established. The plant is reported having antioxidant, antimicrobial and antibacterial properties. The present communications deals with compilation on the economic uses of eryngo to give a holistic picture.

Key words: Eryngo, *Eryngium foetidum*, spice, medicinal uses

INTRODUCTION

About 228 species of the genus *Eryngium* Linnaeus of Apiaceae are reported worldwide. The species eryngo (*E. foetidum* Linnaeus) (Figure 1) is domesticated, cultivated and used extensively (Lawrence 1967). Eryngo is an annual rosette herb, indigenous to tropical America and Caribbean Islands, from southern Mexico to Panama through Brazil and from Cuba to Trinidad (Adam 1971). In late 1800s and the beginning of 1900s, eryngo was introduced by the Chinese into South-east Asia (Malaysia, Indonesia, Thailand, Vietnam, Singapore, Myanmar, Sri Lanka, Bangladesh and India) as a substitute to the coriander because of its similar pungent aroma (Ramcharan 1999; Boonsong 2005; Seaforth & Tikasing 2005; Chowdhury *et al.* 2007). The eryngo is also popularly known as spiny coriander or Mexican coriander or Culantro and is extensively used in various purposes across the globe. Locally, it is called *Awa-phadigom* in Manipuri, *Bahkhawr* in Mizo, *Ban dhania* in Hindi, *Naga Dhania* in Assamese and Nepali or *Bhutia dhania* in Nepali and *Bilati Dhaneyin* Bengali. Regionally, it is called *Andu kola* in Sri Lanka, *Shado beni* in Trinidad, *Chadron benee* in Dominica, *Fitweed* in Guyana, *Coulante* in Haiti, *Recao* in Puerto Rico, *Langer coriander* in Germani, *Walangan* in Indonesia, *Pak chi farang* in Thai, *Ngo ngai* in Vietnamese,

Culantro or *Racao* in Spanish, *Nokogiri coriander* in Japanese, *Yang yuan sui* in Chinese (Mandarin) (Mohammad *et al.* 2012; Singh *et al.* 2003; Singh *et al.* 2014). The plant is also commonly known as Spiritweed or fitweed due to its use in preventing epileptic fits and said to calm a person's spirit (Anonymous 2006). The plant is mostly grown in tropical Africa, South Asia, warmer parts of Europe & Pacific islands (Wong *et al.* 1994; Wagner *et al.* 1999). The major constituent present in the essential oil of the plant is eryngial (E-2-dodecenal) (Paul *et al.* 2011). The aerial part of the plant is rich with nutrients like minerals, vitamins, carotenoids, antioxidants and phytosterols (Bautista *et al.* 1988; Garcia *et al.* 1999), flavonoids, tannins, carboxyls, alcohols, terpenes and triterpenoids (Paul *et al.* 2011; Bhavana *et al.* 2013). The uses of Eryngo are reviewed below:

As Food/Cuisine:

The use of eryngo plant as food/cuisines is widely documented. The plant is used extensively in the Caribbean and in Asia particularly in India and Korea and mainly used for seasoning in the preparation of a range of foods those include vegetables and meat, chutney, sauces and snacks (Ramcharan 1999). It is fondly and extensively used in most parts of northeast India, Bhutan and Nepal. In Manipur, eryngo is used as a local spice specially in cooking of meats and fishes. It is also used in vegetable cooking. It is garnished in Manipuri chilly chutney locally called '*morok-metpa*'. The plant is also used in Manipuri cuisines like '*Oottii*' (many vegetables cooked with a pinch of soda-calcium bicarbonate) and '*Chagem-pomba*' (many vegetables cooked with rice and fermented soyabean locally called '*Hawaijar*') (Singh & Sundriyal 2003). The Chothe tribe of Manipur often serves the leaves especially in beef curry, or adds the raw leaf in dry meat chutney to enhance its taste and aroma (Yuhlung & Bhattacharyya 2014). In Nagaland, the plant is used as leafy vegetable. In Thailand, Malaysia and Singapore, the eryngo plant is used in lieu of cilantro (*Coriandrum sativum* Linnaeus) and topped over soups, noodle dishes and curries.

The eryngo plant is used in making *salsa*, a spicy sauce prepared from tomato, garlic, onion, lemon juice, with liberal amount of chillies (Ramcharan 1999). It is also used in the preparation of *Sofrito* or *Recaito*, the name given to the mixture of seasonings containing culantro and widely used in rice, stews and soups (Wilson 1991). The aerial parts of eryngo are good sources of several nutrients including minerals, vitamins, carotenoids, anti-oxidants and phytosterols (Bautista *et al.* 1988; Garcia *et al.* 1999; Awad and Fink 2000; Chanwitheesuk *et al.* 2005; Aly 2010; Paul *et al.* 2011; Singh *et al.* 2013), rich in calcium, iron, carotene and riboflavin (Ramcharan 1999), impressive quantity of 28.54 % crude protein (Gogoi *et al.* 2014), and Vitamin C (Thara Saraswathi *et al.* 2014).

As Medicine:

In Manipur, the plant is used in treatment of epilepsy and paralysis (Singh *et al.* 2003), the leaf extract is used by Chothe tribe of Manipur in treating liver and hepatic problems (Yuhlung & Bhattacharyya 2014) and in treating arthritis (Leishangthem & Sharma 2014). The eryngo plant is used in traditional medicine for treatment of fever, chills, vomiting, diarrhoea and in Jamaica, the plant is used in treatment of cold and convulsion of children (Honeychurch 1980). In India, the root of eryngo is used in alleviation of stomach pain and appetizer (Mahabir 1991). The leaf also can be eaten in the form of chutney (desserts). Ethnic communities of Kodagu district of Karnataka used it in the treatment of gastrointestinal disorder and the leaf paste to treat wounds (Lingaraju *et al.* 2016). Mohammad *et al.* (2012) have reported that in ethnomedicine, the eryngo is used to treat burns, earache, fever, hypertension, constipation, seizure, asthma, stomach ache, worms, infertility complications, snakebites, arthritis, malaria

and diarrhoea. The plant is used in the treatment of pneumonia, flu and malarial fever (Bautista *et al.* 1988; Mahabir 1991). In scorpion stings, the root of eryngo can be eaten (Mahabir 1991). The plant has traditionally been used in Bangladesh in the treatment of scorpion sting and stomach pains (Chowdhury *et al.* 2007).

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PLATE I. *Eryngium foetidum* Linnaeus: **A.** Plants growing in the habitat; **B.** Harvested leaves made to bundles for marketing

The essential oil obtained from eryngo is used in perfumery and pharmaceutical industries (Lingaraju *et al.* 2016). The antioxidant, antimicrobial and antifungal properties of eryngo have been reported Singh *et al.* 2014 Lingaraju *et al.* (2016). Yagi and his team have obtained a Japanese patent for having developed a skin-whitening agent in which eryngo is one of the four plants used (Singh *et al.* 2014). Pharmacological investigations have established that eryngo is anthelmintic, anti-inflammatory, analgesic (Saenz *et al.* 1997), anti-convulsing, anti-carcinogenic, anti-diabetic (Simon & Singh 1986; Honeychurch 1980), anti-helminthic (Forbes *et al.* 2002), anti-clastogenic activity (Promkum *et al.* 2012), carminative (Aswathy & Oommen 2014), anti-inflammatory (Rajagopal *et al.* 2015). An extract rich with eryngial has been patented for the treatment of parasites in humans and other mammals (Forbes *et al.* 2002; Forbes & Steglich 2007). North East Institute of Science & Technology (NEIST), Jorhat, Assam, a unit of CSIR has already developed formulation of a drug for the treatment of arthritis and skin diseases in which essential oil derived from eryngo is one of the main components (Singh *et al.* 2014).

DISCUSSION AND CONCLUSION

Although eryngo plant (*Eryngium foetidum* Linnaeus) is not given proper attention and care, it has tremendous potential for the mankind in terms of its use as local spice, food and its medicinal properties. It is increasingly becoming a crop of international trade mainly to meet the demands of ethnic population in the developed countries of the West (Ramcharan 1999). It is used in the treatment of more than 20 diseases/ ailments including arthritis, asthma, constipation, convulsion of children, cough, diabetes, diarrhoea, epilepsy, fever, hepatic and liver problems, gastrointestinal problems, hypertension, malaria and vomiting. It is an exotic plant but naturalized medicinal and aromatic herb found in diverse, specific geographical locations in India (Chandrika *et al.* 2013). Generally, the plant is found growing as semi-naturalised population in many parts of northeast India including Manipur. A substantial quantity of the plant in bundles is frequently found being sold at local markets (Figure 2). In Manipur, eryngo is sold in bundles in local markets that fetch a minimum of one rupee per healthy and matured plant (Fig. 1). It is becoming one of the fastest flourishing economically important crops in Mizoram fetching Rs. 10.00 per bundle comprising of 6 - 10 plants (Singh *et al.* 2014). Further, a kitchen garden of 25 × 4 m size (100 m²) could fetch a minimum of Rs. 12,000 in a cropping season of 8 10 months. One exporter from Trinidad, alone packages and air freights upto 2.4 tons of fresh eryngo weekly to the USA. In 1988, Puerto Rico reportedly produced 165,000 kg of eryngo for an estimated value of \$ 201,000 (Ramcharan 1999). It has been observed that in some parts of Northeast India, small population of the eryngo plant is generally maintained in the kitchen gardens for domestic consumption, but a large quantity of eryngo sold in local markets are generally collected from wild habitat thus exerting high extraction pressure. It is concluded that scientific and commercial cultivation of this plant can give a significant boost to the income of the farmers for which adoption of scientific agro-technology is much important. The plant has been observed having luxuriant growth as escape in both tropical and temperate regions more prominently in the eastern parts of India. Experiments for development of its agrotechnology is being carried out by the authors in Manipur agro-climatic conditions.

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