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Makalah Akademia

Infusing Cardamom for Recreational Beverage

By
HANNIS FADZILLAH MOHSIN, ZOLKAPLI ESHAK AND IBTISAM ABDUL WAHAB

Department of Pharmacology and Pharmaceutical Chemistry, Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus,
42300 Bandar Puncak Alam, Selangor Darul Ehsan.
ibtisam@uitm.edu.my

EDITOR: DR. AIDA SYAFINAZ MOKHTAR

The cardamom is a spice locally known as "buah pelaga" (GlobinMed, 2022). It is commonly used in cooking and baking, particularly in Indian and Middle Eastern cuisines (Ashokkumar et al. 2019). The cardamom has a strong, pungent flavour and aroma, and adds a distinctive taste to both sweet and savoury dishes. It is also extensively used as the flavouring agent in dairy and commercial food industry. For examples, it is utilised in the preparation of sweets, milk and milk products (e.g., gulabjamun), bakery products, cakes, bread, rice and meat preparations, alcoholic and non-alcoholic beverages, frozen desserts, candies, puddings, condiments, relishes, gravies, etc. This spice is obtained from the seeds of the cardamom plant, botanically referred to the *Elettaria* species or *Elettaria cardamomum (E. cardamomum*). It is native to southern India and Sri Lanka.

In addition to its culinary uses, the cardamom is also used in traditional medicine for various purposes, including as a digestive aid and for relief from respiratory problems (Gochev et al. 2012).

Cardamom mouthwash is also available in the community pharmacy. Some people believe that rinsing the mouth with cardamom water can help freshen breath, reduce oral plaque and tooth decay, and relieve other oral health problems such as gum infections and toothaches.

While there is limited scientific evidence to support these claims, some studies suggest that certain compounds in cardamom may have antimicrobial and anti-inflammatory properties (Husain et al. 2014) that could benefit oral health. To make a cardamom mouthwash, several crushed cardamom pods can be boiled in water for 10 minutes. The liquid can then be strained and cooled. The resulting cardamom water wan be utilised as a rinse, to swish it around the mouth, before spitting it out.

A few critical reviewed articles were written on the cardamom (Jadav et al. 2018; Ashokkumar et al. 2020). The topics include the botany, chemistry, traditional uses, medicinal properties, and its applications in both dairy and food industries. The antioxidant activities of the ethanol, hexane, ethyl acetate, and water fractions from the cardamom leaves were investigated and documented (Asra et al. 2019).

The phytochemistry of this *Elettaria* species, in fact, depends on the sample origin and the plant parts.

In addition, its aromatic composition is present in the fruit or the pods or the capsules extract (Figure 1). The identification of this cardamom fruit drug could be accomplished, by utilising a biological source or a specimen of the crude drug. It should consist of the dried ripe capsule from an *Elettaria* species. A Dino-Lite Digital microscope could be employed, and the observation would be recorded, as shown in Figure 1. The pale green to yellow fruit is a spherical or subcylindrical trilocular capsule, measuring about 1 to 2 cm long (GlobinMed, 2022).

Figure 1. The whole fruit (left) and the fruit skin (right) of a cardamon, both scale bars are 0.010 mm.

The chemical compositions of the fruit include the essential oils e.g. α-terpinyl acetate and 1,8-cineole (Figure 2, Jadav et al. 2018). Meanwhile, the fatty acid compositions consist of oleic, palmitic and linoleic acids. The volatile oil of the *Elettaria* fruits showed significant antimicrobial activity against pathogenic bacterial and fungal strains (Husain et al. 2014).

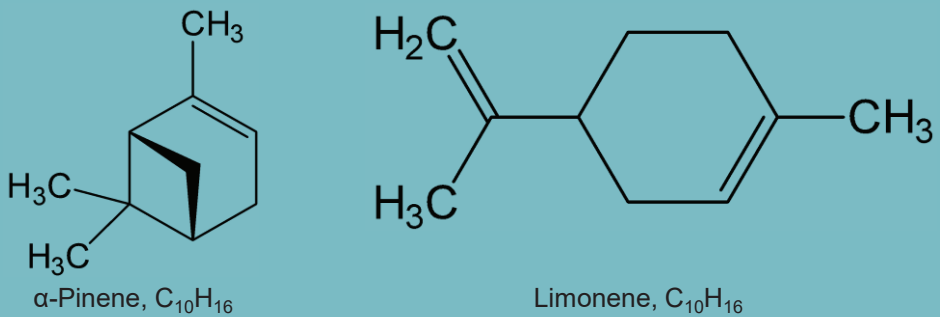

Figure 2. The constituents of essential oil from cardamom.

While beverage consumers can have the taste of cardamom in tea (Boh Tea, 2023 & Ahmad Tea, 2023, Figure 3). Some prefer to go for coffee that is infused with different flavors, from cardamom to ginger or chocolate. Rather than throwing away the coffee husks, they are used to make qishr, a popular Yemeni coffee drink, infused with ginger and cardamom (Hamoud, 2023).

It is served on any occasion, as a recreational beverage.

Durak et al. (2017) showed that coffee and cardamom could provide an excellent source of potentially bioaccessible compounds (especially those from hydroxycinnamic acids) with antioxidant activity. The consumer acceptance test of coffee that was enriched with cardamom, was also conducted. It was found out that cardamom is the additive that could affect not only the flavour and aroma of the coffee, but also its biological activities.

Figure 3. The content of rooibos tea and black tea leaves products would include the cardamom seeds, as in Boh (left) and Ahmad Tea (right).

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