

Chapter 50

Nutraceutical Properties in Flowers

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ABSTRACT

Flowers are associated with human life since time immemorial. Beside aesthetic beauty, several flowers are used for edible purpose viz., rose, marigold, calendula, hibiscus, hollyhock, carnation, chrysanthemum, nasturtium, lotus, cosmos and pansies etc. These flowers have medicinal as well as nutritional values and are rich source of vitamins, antioxidants and mineral elements. The flowers are enriched with various pigments viz., chlorophyll, flavonoids, xanthophylls, carotenoids, betalains and anthocyanin that are generally used in coloring food, beverage, and textile and paper industries. Edible flowers have anticancer, anti-inflammatory, antitumor, antimicrobial and antimutagenic properties too. The flowers are used as vegetables and other purpose since time immemorial, however, flowers for supplementary health products is comparatively a new concept and therefore needs further research to utilize flowers as nutraceuticals.

INTRODUCTION

Today is the era of modernization and industrialization which has shifted keen interest of people from living simple life to luxurious one. This luxurious life makes us lazy as well as creative to search out shortcut of everything especially with respect to food habits. One can see its evidence by knowing the popularity of fast or junk foods among all generations either child, youth and adults. These kinds of food don't have any nutritional value but only provide taste to the tongue. Nowadays due to hectic life schedule of people, their unwillingness toward the outdoor activities and for saving time as well for taste of tongue they have started regular consumption of such types of food. Due to this approximately one third population of the world wide suffering from one of the biggest problem that is obesity. Other than

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obesity these types of eating habits also leads to various serious diseases in human beings viz., heart diseases, cholesterol, cancer, brain hemorrhage, osteoporosis and arthritis etc. (Das et al., 2012). Because of these diseases nowadays life expectancy rate is also become low. The peoples that are suffering from these diseases are become depended on medicine throughout their life span. By taking this medicine from the doctor one can alleviate the symptoms of diseases but cannot get rid of it. So, nowadays people are attracting towards its alternate source i.e., nutraceuticals. The concept of nutraceutical was given by Stephen De Flice in 1989, who was the founder and chairman of the Foundation for Innovation in Medicine. The term nutraceutical consist of two words i.e., nutrition + pharmaceuticals. According to Stephen De Flice, nutraceutical can be defined as, a food that provides various health's benefit as well as enriched in medicinal value too. Nutraceutical helps in prevention and curing of various diseases. Hippocrates stated that our food should be our medicine that helps in alleviating various diseases. Nutraceutical justified his statement by making a link between food and health. Nutraceutical is also known as functional food, designer food, dietary supplements, medical foods and nutritional supplements. According to Dillard & German, 2000 reported that nutraceutical foods have a capacity of curing various diseases in humans. Use of nutraceutical food regularly in diet has various health benefits. They are non toxic food extract. They are naturally occurring chemical compound found in foods. The nutraceutical food contains adequate amount of vitamins, minerals, carbohydrates, lipids and proteins (Zeisel, 1999; Whitman, 2005). There has been lots of work done by various scientists or researchers for finding out the nutraceutical values of fruits, vegetables, medicinal and cereal crops. However, the literatures on nutraceutical value of flowers are meager. So this chapter has written to explore the possibilities of nutraceutical values of ornamental plants.

It was mentioned in literatures that the traditionally flowers were used for religious offering as well in interior decoration. People were used attractive flower petals like rose, viola and day lilies etc for decorating their food items, especially during feasts and banquets (Kopec, 2004). Decorating the prepared food by using flowers formulate food items appears noble as well as unique. At the time of Roman and Greece Empires, elite decorated their feast with rose petals and which were especially meant for eaten. In addition to rose flower petals Romans were also used mellow and violet petals for decoration as well consumption purpose. They also used to prepared oriental dishes from chrysanthemum and daylily flowers and puree or omelets from *Rosa* spp. Similarly, Franciscan used calendula petals for preparing different types of salad. The countries like China and Japan, have been consuming these edible flowers for thousands of year. In India till today rose petals are use for preparation of various recipes like gulkand, rose sherbet and garnishing the sweets. The use of saffron inflorescence is a natural way that is used in coloring the food stuff and beverages so that it look attractive as well as have nutritional and medicinal value. The flowers of Rhododendron are used for preparation of squash, jam, jellies and pickle. It was recorded in literature that in 17th century *Viola odorata* were used for colouring of food, preparation of syrups and medicines (Mlcek & Rop, 2011). In European countries for the preparation of drinks and salad people were used dandelion flowers (Kopec, 2004). Nowadays most of the edible flowers like rose, nasturtium and pansy are popularly consumed in the form of salad and garnishes. These are also used for enhancing the aesthetic appearance of food. Kaisoon et al., 2011 reported that in Northern Thailand, among various ornamental edible crops, *Tagetes erecta*, *Cosmos sulphureus*, *Antigonon leptopus* and *Bougainvillea glabra* commonly and frequently used as a edible purpose that are consumed in the form of salad and flower teas. The people of Thailand believe that consuming these edible flowers in diet helps in curing various diseases viz., diarrheas, stomach ache and nausea etc. It showed that the edible flowers are potential source of antimicrobial activity (Boonyaprapatsara, 2000; Vachirasup, 1995).

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