SUNSHINE AGRICULTURE
e-Newsletter

ISSN (E): 2583 – 0821

Sun. Agri.:e-Newsletter, (2022) *2*(1), 3-6

Article ID: 107

Litchi – A Healthy & Delicious Nut

Aditya Gaurha[1*], Dr. Manoj Kumar[2], Ankit Kumar Goyal[3] and Rajmani Singh[4]

[1]Student, M.Sc. (Horticulture), Department of Fruit Science, SHUATS, PRAYAGRAJ.
[2]Assistant Professor cum junior scientist, Department of Horticulture, Madan Bharti Agriculture College Agwanpur, Saharsa, Bihar.
[3]Student, M.Sc. (Ag.), and
[4]Research Scholar, Department of Horticulture, Babasaheb Bhimrao Ambedkar University, Vidya-Vihar, Raibareli Road, Lucknow, Uttar Pradesh, India- 226025

Open Access

*Corresponding Author
Aditya Gaurha*

Available online at
www.sunshineagriculture.vitalbiotech.org

Article History
Received: 24. 12.2021
Revised: 5. 01.2022
Accepted: 12. 01.2022

This article is published under the terms of the Creative Commons Attribution License 4.0.

INTRODUCTION

The litchi [*Litchi chinensis* Sonn.] is an important subtropical fruit crop considered as non- climacteric fruit, it does not enhance on quality of fruits after harvest but has to ripen on the tree. It is a fruit with sweet and juicy translucent flesh called "Aril". Litchi fruit is botanically called as a single seeded nut. It is a native fruit of China and is being cultivated for more than 2300 years and also in northern Vietnam. The west of Guangdong region in China have a long history of cultivation of some of its cultivars, while others are relatively new.

The interest for this crop is associated to the delicious flavour of the fruit and its high nutritional value. A long series of beneficial health compounds including antioxidant, cancer preventive, antimicrobial, anti-inflammatory activities was demonstrated through several investigations. And hence in 2012, *Litchi chinensis* was inserted in the list of functional foods. In recent years, the number of published articles showing the different biological activities of Litchi components has greatly increased in parallel to the identification of the bioactive components of Litchi fruit and also the other portions of the plant.

Nutritional content

The nutritional content Trusted Source of raw lychee fruit per 100 grams (g) is as follows. A single lychee fruit is approximately estimated to be of 10 g.

Nutrition	Per 100 g of lychee
Calories	66
Protein	0.83 g
Fat	0.44 g
Carbohydrate	16.5 g
Fiber	1.3 g
Vitamin C	71.5 mg

A 100 g of lychee fruit contains an ample amount of the daily vitamin C requirement for both, males and females. Lychee also contains calcium and smaller amounts of B vitamins and minerals such as magnesium and potassium. The dietary guideline for American standards recommends that the fresh lychee is a healthy choice to include towards the two cups of fruit per day. One cup of lychee equates to about 190 gm of fruit. However, Consuming canned lychee, lychee syrup, lychee juice, or lychee desserts, may take someone over the 10% of daily calories as added sugars limit that experts recommend.

Health benefits

A study in 2005, indicates that the lychee flesh is a rich source of plant compounds called proanthocyanidins. According to the study, proanthocyanidins reported to have the following health benefits:

- Antioxidant.
- Anti-diabetic.
- Anti-angiogenic, which means formation of new blood vessels and preventing tumors.
- Anti-carcinogenic, which means inhibiting or preventing cancer.
- Anti-inflammatory.
- Cardio protective.

Proanthocyanidins are also available in some other fruits such as apples, blueberries, cranberry, black currant and grapes.

According to a trusted review source 2016, the scientists have found beneficial effects of lychee extracts from various plant parts in both laboratory and human studies. The scientists indicated that the fruit extract inhibits cancer cells and viruses, protects the liver, and enhances overall health performance.

(NOTE: The laboratory produced extracts benefits achieved by scientists can not be claimed by someone to be same by the consumption of the fruit.)

Another study concluded that lychee pulp, particularly the dried type, has anti-tumor properties. The authors concluded that dietary consumption of the fruit might be of great benefit.

Litchi based products:

Any product that can be derived from any part of the litchi plant can be refered as Litchi based product .The recent status of processed litchi products are, canned litchi, dried litchi, litchi juice, frozen litchi, litchi wine, litchi nuts, synbiotic and probiotic litchi drinks etc.

a) Dried Litchi: Dried litchi has availability round the year and thus gained more importance commercially (Song , 2015). Litchis can be dried after separation of pulp by different drying methods like (i) Air drying (AD), (ii) Microwave-assisted air drying (MWAD), (iii) Microwave-assisted vacuum drying (MWVD) and (iv) Freeze drying (FD). The final moisture content of the product is generally around 7%.

b) Litchi Juice, Squash, Syrup, and Cordial: Litchi juice is the most common and favorable litchi based product. It can be used as a natural antioxidant drink and one of the most widely available commercial product of litchi.

c) Litchi Jelly : The juice is first extracted from mature litchi fruits and the quantity of pectin is tested by alcohol test. As per pectin strength of the extracted juice, a required quantity of sugar is added and the jelly is prepared from it.

d) Probiotic Litchi based beverage: In recent times, there has been an increasing trend of switching simple food towards functional food and therefore litchi juice is used which has got natural antioxidants, which can further be increased by adding probiotics. Probiotics benefit's the host by acting as a living microbial supplement. According to Zheng, 2014

& Ankolekar, 2012,Fermentation of fruit juice through probiotic bacteria improves nutritional, sensorial and also shelf life properties of fruit juice.

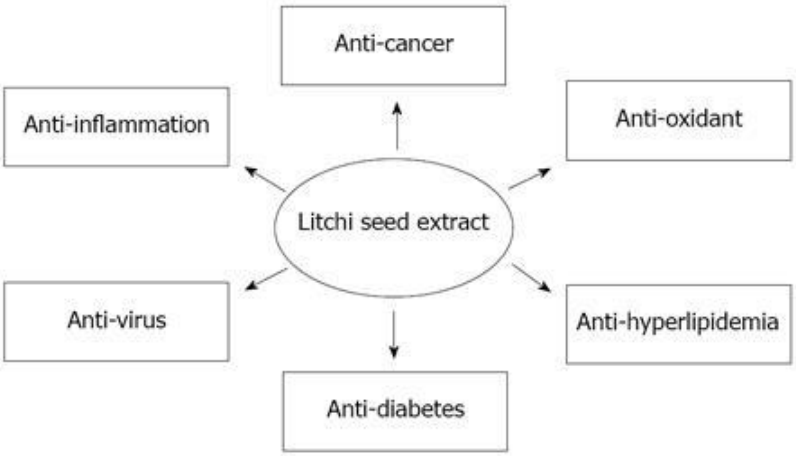
e) Canned Litchi: The canned litchi is of excellent quality and it has great demand both in India and abroad. The canned litchi has a shelf life of around 3 months, after that pink discolouration occurs which may be due to formation of tin-anthocyanin complex.

Antitumor Properties of Litchi Pulp-Derived Components

The anti-tumor activity and the antioxidant property of Litchi pulp extracts has been attributed not only to polysaccharides but also to bioactive phenolic compounds, in particular polyphenols, a structural class of natural, organic chemicals characterized by the presence of multiple phenol structural units. These compounds are abundant micronutrients with antioxidant properties in our diet, and evidence is emerging for their role in cancer prevention. Zhang et al. have detected six individual phenolics (gallic acid, chlorogenic acid, (+)-catechin, caffeic acid, (−)-epicatechin, and rutin) in litchi pulp by high-performance liquid chromatography (HPLC), and reported their antioxidant activity by Frap assay.

Antitumor Properties and Biochemical Aspects of Litchi Seed-Derived Components

The litchi fruit contains a seed (endocarp), which is non-edible and instead it can be toxic when consumed by humans. The presence of methylene cyclopropyl-alanine (MCPA), also known as hypoglycin A, and its analogue methylene cyclopropyl-glycine (MCPG), which causes hypoglycaemic encephalopathy are the reason for the toxicity in the litchi seed. Litchi seed extracts despite of its toxicity, are widely used in Chinese popular medicine to relieve pain in different diseases, and there is increasing evidence that some components of this portion possess multiple activities, such as modulation of blood glucose and lowering of blood lipids preventing liver injury, and exerting anti-oxidative and antiviral effects. The potent antitumor properties exerted by Litchi seed extracts or specific isolated components were found to be referred by many literatures. The recent findings on this subject can be summarized in this paragraph.



CONCLUSION

Litchi is one of most relished fruits having ample amount of bioactive compounds like flavonoids, Vitamin B- complex, ascorbic acid in it to confer significant health benefits. The health benefits is due to these active compounds include disease-fighting ability, better heart health and blood regulation and free radical scavenging capacity etc. However, a seasonal fruit like litchi has its occurrence in the market only for one to two months. Though Litchi is a very popular fruit in most of the places in India, there is much

to do to commercialize litchi and litchi based products in the near future. Due to the medicinal, sensorial and nutritional aspects of litchi fruit, more new products can also be developed retaining the characteristics of the fruit which will have extended shelf life and more viable to the Indian market. More novel technologies might be applied in order to produce products with low microbial contamination, better sensorial quality with bioactive compounds being unharmed. Value-added products also could be developed by using more varieties of probiotic bacteria alone or with different prebiotic matrices in different concentrations. Further research may also be done with respect to production and export scenarios of the processed foods from litchi. Litchi seed extract could also play an important role in overcoming metabolic diseases such as diabetes mellitus, it suppresses oxidation and inflammation .It also decreases triglycerides. The components found in the litchi seed was observed to have anti-cancer properties against liver, cervical, lungs & pulmonary cancer.

REFERENCES

Lin CC, Chung YC, Hsu CP. Anti-cancer potential of litchi seed extract. *World J Exp Med* 2013; 3(4): 56-61 [DOI: 10.5493/wjem.v3.i4.56]

Litchi chinensis. Pub. by:: AppleAcademic Press, Kumar, B. (2011): Pub. by: Ministry of Agriculture, Governmentof India. p. 278.

Kosseva, M., Joshi,V.K. & Panesar, P.S.(2017) : Specific features of table wine production technology, Science and technology of Fruit Wine production p. 295-461, Pub. by: Academic Press.

Choudhary, M.L., Patel, V.B., Siddiqui, M.W. &Verma, R.B. (2015): Climate issues affecting sustainable litchi (Litchi chinensis Sonn.) production in Eastern India. Climate dynamics in horticultural science: Impact, Adaptation and mitigation (vol-2) . Pub. by:: AppleAcademic Press.

Tanaka T, Shnimizu M, Moriwaki H. Cancer chemoprevention by carotenoids. Molecules. 2012;17:32023242. [Pub Med] [DOI] [Cited in This Article: 1] [Cited by in Crossref: 302] [Cited by in F6Publishing: 185] [Article Influence: 33.6] [Reference Citation Analysis (0)]

Tian G, Guo L, Gao W. Use of compound Chinese medicine in the treatment of lung cancer. Curr Drug Discov Technol. 2010;7:32-36. [PubMed] [DOI] [Cited in This Article: 1] [Cited by in Crossref: 11] [Cited by in F6Publishing: 10] [Article Influence: 1.0] [Reference Citation Analysis (0)]

Xu X, Xie H, Hao J, Jiang Y, Wei X. Flavonoid Glycosides from the Seeds of Litchi chinensis. J Agric Food Chem. 2011;59:1205-1209. [PubMed] [DOI] [Cited in This Article: 5] [Cited by in Crossref: 51] [Cited by in F6Publishing: 28] [Article Influence: 5.1] [Reference Citation Analysis (0)]

Guo JW, Liao HF, Pan JQ, Ye BB, Jian XB, Wei DL, Dai LY. Effects of saponin of Litchi on decreasing blood glucose and controlling blood lipid in hyperlipemia-fatty liver rats fed by ligh-sugar-fat. Zhonguo Linchuang Yaolixue yu Zhiliaoxue. 2004;9:1403-1407. [Cited in This Article: 1]

Kaur, M., Velmurugan, B., Rajamanickam, S., Agarwal, R., Agarwal, C. Gallic acid, an active constituent of grape seed extract, exhibits anti-proliferative, pro-apoptotic and anti-tumorigenic effects against prostate carcinoma xenograft growth in nude mice. Pharm Res. 2009;26:2133-2140. [PubMed] [DOI] [Cited in This Article: 1] [Cited by in Crossref: 126] [Cited by in F6Publishing: 91] [Article Influence: 10.5] [Reference Citation Analysis (0)]