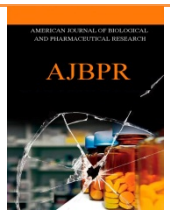
e - ISSN - 2348 - 2184
Print ISSN - 2348 - 2176

AMERICAN JOURNAL OF BIOLOGICAL AND PHARMACEUTICAL RESEARCH

Journal homepage: www.mcmed.us/journal/ajbpr



TYPES AND IMPORTANCE OF BERRIES - A REVIEW

K. Suvetha*[1] and M. Shankar[2]

*[1]Department of Microbiology, Seven Hills College of Pharmacy, Venkataramapuram, Tirupati-517561, Andhra Pradesh, India.
[2]Department of Pharmaceutical Chemistry, Seven Hills College of Pharmacy, Venkataramapuram, Tirupati-517561, Andhra Pradesh, India.

Article Info

Received 25/04/2014
Revised 15/05/2014
Accepted 18/05/2014

Key words:
Antioxidant, Strawberry, Raspberry and Blueberry.

ABSTRACT

Berry is a common edible fruit. They are inherently full of nutrient-rich building blocks such as antioxidants, phytochemicals, flavanoids, carotenoids, polyphenols, vitamins, and minerals. It's these components of berries that are known to be beneficial to the skin, most often used for their anti-inflammatory and antioxidant properties. In addition to antioxidants, berries are "juicy foods," which means they contain mostly water. Plus they smell delicious. Vitamin C is a strong antioxidant found in berries. Eating vitamin C–rich berries will contribute to radiant skin and healthy hair, and may reduce the risk of arthritis, cataracts, and macular degeneration. Some people with IBS experience discomfort after eating berries. However, In this review we are going to do a comparative study of the berries- Strawberry, Raspberry and Blueberry.

INTRODUCTION

Blueberry is one of the oldest fruit and has medicinal purposes. It is rich in phenolics especially in anthocyanins[3] Blueberry is native to North America. It has two different species, low sweet and sour-top or velvet leaf [1]. They've become popular amongst consumers as research finidings show that their consumption improves human health [2].

Strawberry (Fragaria × ananassaDuch.), a member of the Rosaceae family, is one of the most important soft fruit in the world .There are about 20 different recognized species. Strawberries are good sources of natural antioxidants. The most commonly cultivated species is Fragariaxananassa [3,4].

Raspberry is a naturally growing in Arasbaran. It is known by recent works that raspberries in particularly high not only in anthocyanin content, but also in total phenolics [5]. Raspberry fruits can be red, black, purple, or yellow. Most commercial raspberries grown in the Pacific Northwest are red fruited[5]. Raspberries have been linked to many possible health benefits [6].

Corresponding Author

K. Suvetha
Email:-shankarmanichellappa@gmail.com

STRAWBERRY

The Strawberry tree (Arbutus *unedo)* belongs to the *Ericaceae*family and is commonly found in Meditteranen regions was show in fig 1. It bears which are spherical, dark red in colour and tasty when fully ripened. They are rich in flavonoids. They can be used for the production of alcoholic beverages, jams, jellies and marmalades. They are also used in medicine as antiseptics, diuretics and laxatives. The strawberry has a rich secondary metabolite composition in particular [7]. Their major composition is phenolic compounds which is represented by the flavonoids (mainly anthocyanins, with flavonols and flavanols providing a minor contribution), followed by hydrolyzable tannins (ellagitannins and gallotannins) and

phenolic acids (hydroxybenzoic acids and hydroxycinnamic acids), with condensed tannins (proanthocyanidins) being the minor constituents [8].

The beneficial advantages of strawberries are their role in prevention of inflammation, oxidative stress and cardiovascular disease (CVD), certain types of cancers, type 2 diabetes, obesity and neuro degeneration.

Strawberries inhibit different types of cancer cell transformation and proliferation in vitro and in decreasing the early and late progression of experimentally induced tumors. Therefore strawberry extracts protect against carcinogenesis.

BLUEBERRY

The major production of Blueberry is found in two places namely, United States which is responsible for 66 % and Canada which is responsible for 33 % of world production[9]. It was an unknown fruit in Brazil and its introduction in that country began in the second half of 80s. But now it has become a blueberry producer with a small production concentrated in the south and southeastern regions of the country, in the municipalities of Vacaria and Caxias do Sul (Rio Grande do Sul, RS), Barbacena (Minas Gerais, MG), and Campos do Jordao [9]. The different species of blueberry are highbush (V. *corymbosum),* lowbush (V. *myrtilloides*and*V. angustifolium),* and rabbiteye (V. *ashei)*. And out of these, Highbush blueberries are the most commonly cultivated [10, 11].

Out of the total phenolics found in blueberries, Anthocyanins represent 57-93 %. The Major anthocyanins for blueberries are namely malvidin 3-galactoside and malvidin 3-glucoside in blueberries. These phenolics have a wide spectrum of biochemical activities like antioxidant, antimutagenic, abilities to modify gene expression, as well as cardiovascular protection, antidiabetic properties, vision improvement properties, and inhibition of carcinogenesis.

RASPBERRY

Raspberry (Rubusideaus L.) is a fruit in the genus Rubus, grown as a perennial crop. Raspberries are soft, juicy with a distinct aroma. There are about 200 raspberry species and most of these have red berries (European), while some have black berries (American). The red raspberries originate from Asia. The species was named after Mount Ida by Carl Linnaeus [12]. These fruits are industrially used in formulating jam, jelly, sauce, puree, topping, syrup or juice concentrates etc. Raspberries are rich in potential antioxidant phenolic compounds including anthocyanins and also vitamin C and E. They have major curative roles also like, antioxidant, antinflammation, low body weight, and inhibitory cancer cell growth reducing eyestrain, improving night vision, helping to prevent macular degeneration, anti-inflammatory effects, protecting against DNA damage, and exhibiting anti-cancer activity, and they also contain salicylic acid which have protective effects similar to aspirin which prevent heart disease in those at high risk or who have heart disease [13].

Fig 1. a. Strawberry and b. Blueberry c. Raspberry

A

B

C

CONCLUSION

Hence from this we conclude that Berry is a very useful fruit. They are full of nutrient-rich building blocks such as antioxidants, phytochemicals, flavanoids, carotenoids, poly phenols, vitamins, and minerals. It's these components of berries that are known to be beneficial to the skin, most often used for their anti-inflammatory and antioxidant properties. And this review also shows the properties and the functions of the three most important berries which are very useful to man.

ACKNOWLEDGEMENT

I am thankful to Seven Hills College of Pharmacy, India for providing facility to carry out the research work.

REFERENCES

1. Frank Drummond, John Smagula, SeannaAnnis, David Yarborough. (2009). Organic Wild Blueberry Production.
2. GraziellaColato A, Flavia Regina F, Cristina Yoshie T, Kil Jin P. (2010). Rheological behavior of blueberry.

3. Adriana Soto. (2013). Potential influence of blueberry and black raspberry pomacephenolics on inflammatory cytokines in coronary cells.
4. Samir C. Debnath, Jaime A. Teixeira da Silva. Strawberry Culture *In Vitro*, Brookfield Road, St. John's, Newfoundland and Labrador A1E 5Y7, Canada.
5. Miki cho, Ikenobe. (2010). Commercial Red Raspberry Production, Kagawa University, Faculty of Agriculture, Department of Horticulture, 1, 0761-0795.
6. Danny L. Barney, Peter Sheila M. Fitzpatrick, LynellTanigoshi, entomologist, Washington State University, Mount Vernon Northwestern Washington Research and Extension Center, 201.
7. AezamRezaeeKivi, NasrinSartipnia. (2013). Physico-chemical characterization and total phenolics of raspberry fruits, *International Journal of Agriculture and Crop Sciences*, 6-13, 934-937.
8. Tavaresa L, Fortalezasa S, Carrilhoa C, McDougallb GJ, Stewartb G. (2010). Antioxidant and antiproliferative propertiesof strawberry tree tissues.*Journal of Berry Research*, 1, 3-12.
9. Francesca Giampieri D, Sara Tulipani P, Jos M. The strawberry: Composition, nutritional quality, and impact on human health.
10. Eliseu R, Naira P, Ismael Ivan R, Luciano Valdemir G, CamilaRibas M, Roseane F. Phenolic compounds and antioxidant activity of blueberry cultivars grown in Brazil.
11. Tom Bewick, Jim Hancock, Karen Hokanson. Report of the berry working group (Strawberry, Raspberry/Blackberry, Blueberry).
12. Roopesh M. Syamaladevi a, Shyam S. Sablani, Juming Tang a, Joseph Powers b, Barry G. Swanson b. State diagram and water adsorption isotherm of raspberry (Rubusidaeus), Department of Food Science and Human Nutrition, Washington State University, P.O. Box 6463760, Pullman WA 99164-6376, USA.
13. Sara Tulipani P. (2013). Physico-chemical characterization and totalphenolics of raspberry fruits grown in Iran. *International Journal of Agriculture and Crop Sciences,* 6-13, 934-937.