

Berry Fruits Grown in Duzce and Its Neighborhood: Their Medical Applications

Fatma Çiğdem Sakinoğlu Oruç^{1}, Sevda Dursun²

¹Fatma Çiğdem SAKİNOĞLU ORUÇ (Technical Programs Department, Duzce University Cilimli Vocation School, Duzce, TURKEY.

²Sevda Dursun(Technical Programs Department, Duzce University Cilimli Vocation School, Duzce, TURKEY.

ABSTRACT

Berry fruits possess many positive effects on human health because of their phytochemical contents like phenolic compounds, antioxidants and anthocyanins, and they have also an important place among the functional foods. From the varieties of Isabella grape and Bursa-2 blackberry cultivated in Duzce and its neighborhood, aging-retardant cream, vinegar (cyme) which aids in the weight loss and alleviates the stomach discomfort, and grape and blackberry juice are produced. Besides, other berry fruits are also used but only in the form of folk medicine. Thus, further studies about the berry fruits grown in the region may increase the potential medical usages of those plants.

Keywords: Duzce, Berry Fruits, Bursa-2, Phenolic Compounds, Medical Usage.

INTRODUCTION

Duzce Province, except coastal district of Akcakoca, consists of the concave areas surrounded by the mountains. It extends to the Akcakoca Mountains in the north, the Bolu Mountains in the east, and the western extensions of the Abant Mountains in the southeastern and southern regions. Province is located at an altitude of 150 m and it is under the influence of humid and mild climate which governs in the coastal areas of the Black Sea Region. In province, annual average temperature is 13.3 °C, average annual precipitation is 822.6 kg/m² and average relative humidity is 75.2 %. Duzce is considered to be a rich province in terms of its natural vegetation.¹ The geographical structure of the region is suitable to grow the berry fruits without irrigation, and berry fruits are cultivated both in wild and cultured conditions. The ellagic acid (anticarcinogen) from phenols, and anthocyanins, quercetin, kaempferol and myricetin from flavones and flavonoids (antioxidant), which are intensively found in the berry fruits, are the most important herbal compounds with “nutraceutical” or “functional food” values.^{2,3,4}

In light of above-knowledge, cultivation of berry fruits in Duzce Province and its neighborhood, and their usage for medical purposes are still an undergoing research process.

RESULTS AND DISCUSSION

According to TURKSTAT data (2013), total agricultural land cultivated in Duzce Province and its neighborhood is about 11231 hectares, of which 25.4% comprise the fruits. From 65892 tons of fruits produced per year, 176 tons belong to the grapes, and 56 tons belong to the blackberries, figs and raspberries.⁵ Blackberry and black grape cultivated in the region are from the industrialized fruits due to their phenolic compounds, and easy storage and transportation advantages. Blackberry (*Rubus canescens* DC. var. *canescens*) plant contains the malic acid, lactic methyl salicylate, tannin, pectin, sugar, flavonoids, magnesium, iodine, manganese, and vitamins A, C, E, K, P and PP. In a study conducted by Pehluvan *et al.*⁶ in fruit of the blackberry plant, 58-100 TE/g ORAC, 83-326 mg/100g

DOI: 10.5530/ijper.51.3s.43

Correspondence:

Fatma Çiğdem Sakinoğlu Oruç,

Fatma Çiğdem SAKİNOĞLU ORUÇ (Technical Programs Department, Duzce University Cilimli Vocation School, Duzce, Turkey.

Phone no: 0 531 639 81 29

E-mail: cigdemsakinoglu@duzce.edu.tr



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anthocyanin, 3.69 mg/100g ellagic acid, 0.5-3.5 mg/100g quercetin and 0.1-0.3 mg/100g kaempferol were identified. Ellagic acid was reported to significantly inhibit the cancer development by reducing the oxidative damages on DNA.⁷ Quercetin was reported to have both anticancer and antioxidant properties. Antioxidants such as quercetin and kaempferol can prevent the lipid peroxidation, which causes the cell destruction in human body.²

Isabella grape (*Vitis labrusca* L. *Isabella*), locally known as black grape, contains the resveratrol (3,5,4-trihydroxy-stilbene), acids (tartaric, citric, malic, succinic, fumaric, pyruvic, α -oxaglutamic, glyceric, glycolic, dimethyl-succinic, shikimic and quinic), vitamins B (B1 and B2), minerals, potassium, magnesium and iron. Invitro and animal studies have demonstrated that resveratrol compound particularly in Isabella grape inhibits the capillary blockage by its antioxidant activity, and hinders the platelet aggregation in capillary vessels via modulation of the apolipoprotein and lipid synthesis.^{8,9} It was thereby reported that human body can obtain more benefits from the resveratrol compound when the grape is consumed along with its shells as a whole.^{10,11}

Arbutus unedo (strawberry tree) plant has constipating and germicidal effects. Its microbicidal effect is particularly beneficial for the urinary tract infections. Its fruits have also diuretic properties. In region, this plant is mainly consumed as fresh fruits as well as its jam is made.

Ficus carica L. (fig) has widespread consumption among the public because of its anti-constipation property and beneficial effects on the digestive system. It is found almost in every home gardens in the region.

CONCLUSION

In Turkey, usage of berry fruits for medicinal purposes has been increasing year by year. For this reason, Duzce Province and its neighborhood have been suitable

regions for cultivation of berry fruits due to the relevant ecological and geographical conditions. Thus, ongoing researches in the region will provide possibilities for discovery of the novel compounds for alternative medicine. Overall, berry fruits grown in the region seem to have great importance for future in terms of the alternative medicine.

ACKNOWLEDGEMENT

Nil

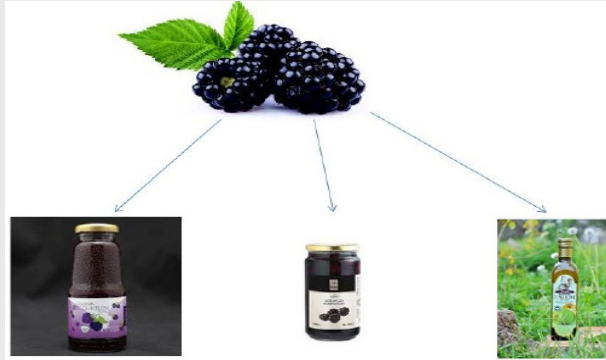
CONFLICT OF INTEREST

Nil

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PICTORIAL ABSTRACT



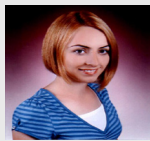
SUMMARY

- Duzce is considered to be a rich province in terms of its natural vegetation.
- The geographical structure of the region is suitable to grow the berry fruits without irrigation, and berry fruits are cultivated both in wild and cultured conditions.
- From the varieties of Isabella grape and Bursa-2 blackberry cultivated in Duzce and its neighborhood, aging-retardant cream, vinegar (cyme) which aids in the weight loss and alleviates the stomach discomfort, and grape and blackberry juice are produced.
- Besides, other berry fruits are also used but only in the form of folk medicine.

ABOUT AUTHORS



Fatma Çiğdem SAKİNOĞLU ORUÇ: (Technical Programs Department, Duzce University Cilimli Vodication School, Duzce, TURKEY



Sevda Dursun: Technical Programs Department, Duzce University Cilimli Vodication School, Duzce, TURKEY.

Cite this article: Fatma Oruç ÇS, DURSUN S. Berry Fruits Grown in Duzce and Its Neighborhood: Their Medical Applications. Indian J of Pharmaceutical Education and Research. 2017;51(3)Suppl:S338-340.