

## **Radical Scavenging and Phenolic Content of Persimmon Fruit (*Diospyros kaki*) Cultivated in Canakkale Region, Turkey**

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### **Abstract**

Persimmon fruit (*Diospyros kaki*) is known to originate from the Eastern parts of Asia, widely cultivated in Japan, China, but recently it is also gaining importance in regions with mild climate such as the Mediterranean Region. Nowadays, persimmon is also cultivated in the Canakkale Region, Turkey and is a fruit mainly preferred for its peculiar ripe-sweet taste and yellow to orange color. The yearly production of persimmon in Turkey continually increased and in 2013 reached 33 232 tones. Persimmon is mainly ripened and harvested from October to December and is available on the market in its ripe form through winter months. Persimmon is not only a fruit preferred for its appearance and taste, but is also a very good source of bioactive compounds including vitamins, phenolics, tannins, carotenoids. These bioactive compounds are usually related to beneficial health effects in humans mainly due to their antioxidant and radical scavenging capacities.

The results revealed that persimmon fruits are substantially rich in total phenolic compounds and have considerably high free radical scavenging capacity. The ripe persimmon fruits were found to be good sources of bioactive compounds, thus their consumption is recommended in preventing diseases and strengthening the immune system.

**Key words:** *Persimmon, phenolic compounds, radical scavenging capacity.*

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## Introduction

Persimmon fruit (*Diospyros kaki*) is known to originate from the Eastern parts of Asia, widely cultivated in Japan, China, but recently it is also gaining importance in regions with mild climate such as the Mediterranean Region. Nowadays, persimmon is also cultivated in the Canakkale Region, Turkey and is a fruit mainly preferred for its peculiar ripe-sweet taste and yellow to orange color. The yearly production of persimmon in Turkey continually increased and in 2013 reached 33 232 tones. Persimmon is mainly ripened and harvested from October to December and is available on the market in its ripe form through winter months. Persimmon is not only a fruit preferred for its appearance and taste, but is also a very good source of bioactive compounds including vitamins, phenolics, tannins, carotenoids. These bioactive compounds are usually related to beneficial health effects in humans mainly due to their antioxidant and radical scavenging capacities.

## Method

**Plant Materials:** Ripe fruits of persimmon (*Diospyros kaki*) were obtained from local open markets of Canakkale, Turkey.

**Preparation of Persimmon Extracts:** The persimmon fruits were kept at 4°C prior to analysis (not more than 24 hours). The extraction with ethanol, acetone and methanol: ethyl acetate: petroleum ether (1:1:1) was done according to Maisuthisakul et al. (2007).

**Analysis of Total Carotenoid Content:** The total carotenoid content of the extracts was determined spectrophotometrically according to Lichtenthaler and Buschmann (2001).

**DPPH Free Radical-Scavenging Activity Assay:** The effect of the persimmon fruit extracts on 2,2-diphenyl-1-picrylhydrazyl (DPPH) was estimated as described by Brand-Williams et al. (1995).

**Statistical Analysis:** The results were reported as mean  $\pm$  SD (standard deviation). The differences between the mean values were determined by using Statgraphics Centurion XV software. The values were considered to be significantly different at  $p < 0.05$ .

## Results and Discussion

In the present study, ripe persimmon fruits cultivated in the Canakkale region, Turkey were evaluated for their total carotenoid content. Furthermore, the free radical scavenging capacity of the ethanolic extracts of the persimmon fruits was estimated by the free radical 2,2'-diphenyl-1-picrylhydrazyl (DPPH) scavenging method.

Table 1. Total carotenoid content of the persimmon fruits\*

Solvents	Total Carotenoids **
	$\mu\text{g} / \text{g}$ fresh fruit
Ethanol	7.20 $\pm$ 0.09 <sup>a</sup>
Acetone	5.77 $\pm$ 0.11 <sup>c</sup>
Methanol:Ethyl acetate:Petroleum ether (1:1:1)	6.89 $\pm$ 0.05 <sup>b</sup>

\*The values are given as mean  $\pm$  standard deviation (n=3).

\*\*Means with different letters within a row are significantly different at  $p < 0.05$ .

Table 2. Total phenolic and flavonoid content of the persimmon fruits\*

Total phenolics (mg / g fresh sample)	2.157 $\pm$ 0.139
Total flavonoids (mg / g fresh sample)	2.642 $\pm$ 0.201 <sup>c</sup>

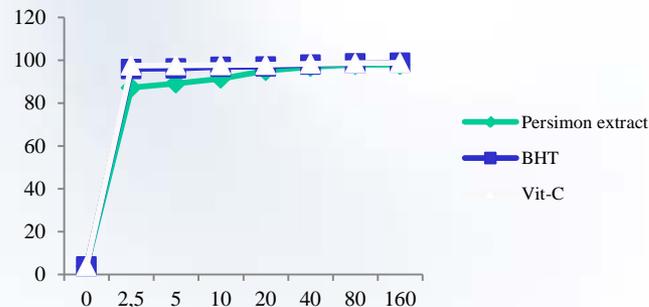


Figure 1. % inhibition of persimmon extract, BHT and vitamin C



## Conclusion

The results revealed that persimmon fruits are substantially rich in total phenolic compounds and have considerably high free radical scavenging capacity. The ripe persimmon fruits were found to be good sources of bioactive compounds, thus their consumption is recommended in preventing diseases and strengthening the immune system.

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