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# Comparative Study of Flavonoid Content of Three Types of Onion

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**Abstract:** *Onion, shallots, and garlic are the oldest cultivator of plants used as food and for medicinal applications. This food is rich in phytonutrients. For the treatment and prevention of diseases onions are used. Including cancer, heart disease, ulcers, etc. This study evaluates the flavonoid content of onions. Among the three variety of onions shallots having the highest amount of flavinoid content in both raw(46.2g/100 mg) state and also by cooking(for boiled 29.2g/100 mg),and the least amount of flavinoid is present in onions(for raw -27.6g/100mg and for boiled onion- 19g/100 mg ). Along with these elements the thiosulphides and volatile sulphur compounds are responsible for the pungent smell of onions. Recently there has been an increasing scientific attention on this compounds .Due to the presence of such phyto-chemicals onions are rich in antioxidants.*

**Keyword:** *Flavonoid, Allium cepa, Allium ascalonicum, Allium sativum*

## I. INTRODUCTION

The origin of onion still remains unresolved. According to Vavilov (1951) onion originated in the area of Pakistan. Jones and Mann (1963) have suggested Pakistan, Iran, and the Mountainous areas to the north .A global review of major vegetables shows that onion ranks second after tomato in area. Approximately 58 million tones of onions are produced on 3.2 hectors globally. India grows approximately 7,56,000 hectors with production of about 12.16 million tons. The leading onion growing countries are China, India, USA, Japan, Spain, Turkey, Brazil, Italy, Egypt, Pakistan and Iran. Since ancient times Garlic, Shallots, Onions have been used as common foods, and for the treatment of many diseases. These are part of the daily diet for most of the populations and are a crop of great economic importance in all over the world. It has been used as an ingredient in various dishes for thousands of years by different countries under many cultures around the world. In Ethiopia, onion is the most important crop among the spices and is an integral part of diet and hence used in almost all food preparations. It is cultivated almost through Ethiopia and ranks first in production among spices. Not only does the vegetable lend an excellent taste to food but also is associated with imparting a number of health benefits. The first citation of these plants is found in the Codex Ebers an Egyptian medical papyrus reporting several therapeutic formulas based on garlic and onions as useful remedy for a variety of diseases such as heart problems, headaches, bites, worms and tumors. Cloves of garlic have been found in the tomb of Tutankhamen and in the sacred underground temple of bulls of Saqqara. Raw plants were given to asthmatics and to those people suffering from bronchial -pulmonary complains. Allium species are rich source of Phytonutrients, useful for the treatment or prevention of number of diseases which includes cancer, coronary heart diseases, obesity, hypercholesterolemia, diabetes type 2, hypertension, cataract and disturbances of the gastrointestinal tract (E.g., colic pain, flatulent colic and dyspepsia) Allium is the largest and most important representative genus of the Alliaceae family and comprises 450 species widely distributed in the northern hemisphere. Besides the garlic and onion several other species are widely grown for culinary use, such as Leek (*Allium porrum* L.) Scallion (*Allium fistulosum*), Shallot (*Allium ascalonicum* Hort), Wild garlic (*Allium ursinum* L.), Elephant garlic (*Allium ampeloprasum*), Chieve (*Allium schoenoprasum*), Chines chive. Mainly the fleshy bulb that grows below the ground is used medicinally as well as for food but other parts of the plant also has a place in the traditional medicines. *Allium cepa* is common onion.

## II. MATERIALS AND METHODS

### A. Collection Of Plant Materials

The three varieties of onion were purchased from the super markets of Trivandrum city.

### B. Preparation Of Onion Extract

The onion bulb was washed with freshly prepared sterile distilled water .The outer covering of the bulb was manually peeled off,and the fleshy part of the onion was rewashed with freshly prepared sterile distilled water and weighed. The onion bulb is cut into small parts and squashed. To the squashed preparation 90% of ethanol (200 ml) was added for 8 hrs with 10 minute interwell

shaking .The extraction is filtered using muslin cloth and whatman no.1 filter paper .The filtrate was evaporated at 45<sup>0</sup>C to dryness and was kept in a sterile bottle and refrigerated until use.

**C. Test For Flavinoids**

5 ml of dilute ammonia solution was added to a portion of the aqueous filtrate of the extract followed by addition of con H<sub>2</sub>SO<sub>4</sub>.Appearance of yellow colour indicates presence of flavinoids. (Prasad *et al.*, 2015).

**D. Estimation Of Flavinoids**

The Aluminium chloride colorimeter assay was employed for quantifying flavinoids in the crude extracts. One ml of each extract and 4 ml distilled water were taken into a 10 ml volumetric flask .To this flask 0.3 ml of 5% sodium nitrate was added and 0.3 ml of 10% aluminium chloride was mixed after 5 min. There after 2 ml of 1 ml sodium hydroxide was treated after 5 minute and the content was diluted to 10 ml with distilled water .A standard curve was prepared with quercetin solution (20,40,60,80and 100 mg/ml) as the procedure discribe earlier .The absorbance readings were recorded for test and standard solution against blank at 510 nm in Uv/visible spectro photometr . The total flavinoid content was expressed as mg of QE/g of extract. (Madhu *et al.*, 2016)

**III. RESULT AND DISCUSSION**

The present experiment was carried out to make a comparison study between the flavonoid content of three varieties of onion. The three varieties includes Onion, Shallots and Garlic. They have a number of phyto nutrients and chemicals which are responsible for large number of health benefits and medicinal properties.TO find out these beneficial properties we first carried out a screening test based on various parameters.

	Boiled onion	Boiled shallots	Boiled garlic	Raw onion	Raw shallots	Raw garlic
Flavinoids	+	+	+	+	+	+

Table 1 : Results of screening for flavonoid

+ (Presence of phytochemical)

- (Absence of phytochemical)

Sample name	Flavinoid content(/100mg)
Onion(boiled)	19g/100mg
Shallot (boiled)	29.2/100mg
Garlic (boiled)	21.6g/100mg
Onion	27.6g/100mg
Shallots	46.2g/100mg
Garlic	38.7g/100mg

Table 2 : flavonoid content of onions

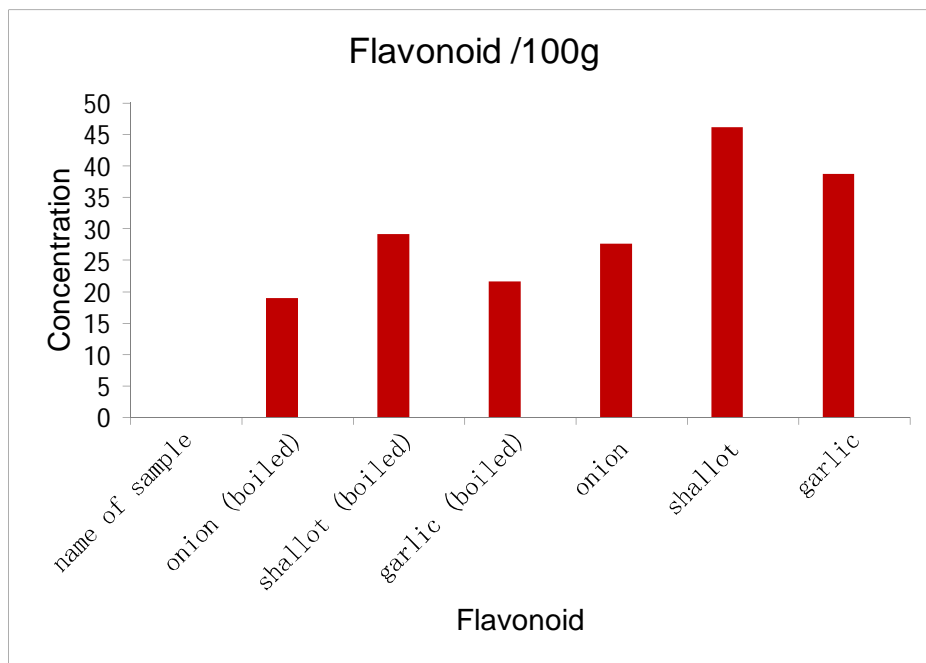


Fig 1 : flavonoid content of onions

Phenolic compounds are known to occur widely in the plant kingdom as secondary metabolites. they having health promoting properties due to their antioxidants. They have been proposed for decreasing the risk of heart diseases. Among the three variety of onions shallots having the highest amount of flavinoid content in both raw(46.2g/100 mg) state and also by cooking(for boiled 29.2g/100 mg),and the least amount of flavinoid is present in onions(for raw -27.6g/100mg and for boiled onion- 19g/100 mg ) .According to pilar cano et al.,,2009 noted that the flavinoid content in onion is 21.6 g/100mg and for shallots it is 31.8g/100mg ,he do his work on the total flavinoid content and antioxidant properties in onions ,they have been related to human health promoting effects .As we comparing both the raw onions with boied onions we get an idea of raw onion is having more flavinoid content than boiled onion .

#### IV. CONCLUSION AND SUMMARY

Onion, shallots and garlic ,commonly used as food, they are among the oldest herbal remedies prescribed as antimycotic ,antibacterial ,hypoglycemic ,hypo tensive, hypocholesterolemic, anti thrombotic drugs, both for prevention and therapy. The result of the study demonstrated that the content of flavonoid have higher values when subjected to extraction with 90%ethanol. Along with these compounds onions are rich in some bioactive and volatile compounds . The pungent smell of onions are caused due to the presence of thiosulfinates .From these studies we can say that onion have high antioxidant value . Comparison study is carried out between onions ,shallots, and garlic ,in its raw and boiled state. By comparing the values of raw and boiled onions we can say that raw onions having more antioxidant property. The reason that the onion is so much more active in its raw state than cooked,it contains a variety of organic sulphur compounds ,contained a volatile oil that provide the health benefits . These are partly destroyed by heat. When eat raw the juice can act as an irritant and some people find it difficult to digest. For people with sensitive stomachs ,this is a far suitable way to enjoy the healthy benefits of onion .

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