



CODEN (USA): IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>**Research Article****DETERMINATION OF ANTIOXIDANT ACTIVITY OF SOUTH
INDIAN TROPICAL FRUITS ANANAS COMOSUS
(PINEAPPLE) AND LEMON (CITRUS LIMON) BY PRUSSIAN-
BLUE METHOD****Abdul Wahid Shah¹, Mohd Shafi Parrey*², Gh. Hassan Bhat³**¹Department of Zoology, Govt. Degree College Bemina Srinagar J&K (India)²Department of Botany, Govt. Degree College for Womens Anantnag J&K (India)³Department of Botany, Govt. Degree College Dooru Anantnag J&K (India)**Abstract:**

Pineapple and lemon plant samples was extracted with 10ml of 100% methanol and left it overnight, Next day filtered with Whitman filter paper and make up the volume up to 25ml with 100 ethanol. The anti-oxidant activity was done by Prussian-blue method. A comparison of two fruits confirms that pineapple shows lowest antioxidant activity than lemon.

Keywords: *Pineapple, lemon, antioxidant activity, Prussian blue method*

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Please cite this article in press as Mohd Shafi Parrey et al, **Determination of Antioxidant Activity of South Indian Tropical Fruits Ananas Comosus (Pineapple) and Lemon (Citrus Limon) by Prussian-Blue Method**, Indo Am. J. P. Sci, 2016; 3(10).

INTRODUCTION:

Antioxidants work by donating an electron to free radicals to convert them to harmless molecules. This protects cells from oxidative damages that lead to aging and various diseases. Manorama singh studied the most popular and abundant antioxidant vitamins are ascorbic acid, tocopherol and beta carotene [1]. Medical studies show that antioxidants help in preventing certain diseases such as arteriosclerosis.

Masaaki Terashima et.al evaluates the antioxidant activities of water soluble ingredients of foods [2-5]. Protective effects of antioxidants against hypochlorite radicals or hydroxyl radicals have been studied by comparing changes in absorbance of myoglobin at 409nm.

Marino B. Arnao Studied the antioxidant activity of biological material ABTS and DPPH radical

Kitt and Weiler K studies the antioxidants in food materials [6-8]. The reports show that oxidative stress is closely related to aging process [9-11].

Madsen H L and Bertelsen G. Analysed the oxidation lipids in food stuffs results in the development of off flavor, rendering the product unacceptable for human consumption.

Karadeniz Feryal et.al Studied the antioxidant activities of fruits apple quince, grape, pear and pomegranate, potato, onion, spring onion, red reddish and red cabbage were determined

Naik Seema Met al studied that the non-edible portion of custard apple were extracted with solvents of varying polarity and evaluated for their antioxidants activity using different chemical reagents.

Ramakrishna B V et al Reports the antioxidant activity of rosella (Hibiscus sabdariffa) using alpha – alpha diphenyl beta picrylhydrazyl(DPPH) and beta carotene [12].

MATERIAL AND METHODS:

All solvents and chemicals used were analytical /BDR grade. DPPH was obtained from March, Mumbai, India. Fruits were purchased from local market in Nagpur Maharashtra India.

Uv-Vis. Spectrophotometer

Uv- visual measurement were performed on a Uv-Visible 1700 spectrophotometer SHIMADZU Physico Chemical analysis

Sampling

Two fruits of each treatment were used for all analysis

Acidity

The acidity was measured by titration with 0.1N NaOH to pH 8.1 and expressed as malic acid. Acidity was expressed as % (g/100g)

pH

10 g of samples were homogenized for pH measurements. A digital Ph meter was employed at 25°C.

Total soluble solids:

The content of total soluble solids was determined using samples of fruits pulp with a hand refractometer, at room temperature (range from 18-23°C).

Ratio (Solids/acidity)

The ratio was calculated using the relation between the total soluble solids by acidity

Tannin

Tennin content was determined according to Hurwitz.

Determination of total phenolic contents

This is a nondestructive rapid and sensitive which can detect a very small quantity following three different methods were used for the determination of phenolic phenolic content which was calculated from the standard graph.

Prussian-blue method**Plant material**

Healthy and fresh grapes and pineapple were selected and purchased from the total market of Hyderabad.

Preparation of Samples

Fruits were cleaned under running tap water excessive water was drained off. The fruits were cut into small pieces and subjected to size reduction using kitchen blender with a kitchen mixer to get a thick paste, and kept at 20°C for further analysis.

Preparation of extract:

250mg of plant samples was extracted with 10ml of 100% methanol and left it overnight, Next day filtered with Whitman filter paper and make up the volume up to 25ml with 100% ethanol.

RESULT AND DISCUSSION:

All results were obtained from a minimum of four independent experiments and the relevant means were calculated. Date was expressed on a dry weight basis.

Prussians -blue method

Table 2 shows the phenolics compound present is 86.96 % 141.98% for grapes and pineapple respectively. By this method pineapple shows the highest polyphenolic content as compared to grapes

This test is based on the reduction of tannin and other polyphenolics of ferric ion to ferrous ion , followed by the formation of ferricyanide ferrous ion complex. The colour product known Prussian blue absorbs maximum at 725nm. Increase amount of tannin results in the production of increasing amount of the blue pigment, which absorbs the red end of the spectrum

Table1: Physicochemical analysis

Parameter	lemon	Pineapple
Acidity	3.77	2.56%
pH	4.2	3.20-4.00
Total soluble solids	1.82	2.36
Ratio (solid/acidity)	63.38	18.62
Tannin %	4.419	2.77

Table 2: Prussians -blue method

Fruits	OD	% Dry Matter	$\frac{\text{OD} \times 78.26 \times \text{dilution factor}}{\text{(%Dry Matter)}}$	% Tannin Content
grapes	0.030	82.4	$\frac{0.072 \times 78.26 \times 50}{82.4}$	1.424
pineapple	0.052	89.4	$\frac{0.052 \times 78.26 \times 50}{82.4}$	2.276

Factor = 78.26

Dilution factor (DF): ration of final volume/ aliquot volume

Final volume = aliquot+ dilute

When DF= 25/0.5= 50

The two fruits have different tannin content. The low value of tannin present in pineapple fruit indicates better antioxidant activity.

CONCLUSION:

- The value of the polyphenolic content is high.
- The results are a direct measure of soluble polyphenolic content
- The test is so sensitive that no interfering color is present at the dilutions used
- The antioxidant activity of fruits varies considerable according to the type of fruit
- The formation of Prussian blue complex offers sensitive, versatile method for spectrophotometric determination of total polyphenols.

REFERENCES:

1..Karadeniz feryal, Burudulu Hande salen, koca nuray, soyer yesim 2005 antioxidant activity of selected fruits and fruits growth in turkey turk.j. agric for. 29,297-303

- 2.Kaur charanjit and Kapoor Harish C. 2000 antioxidant activity and total phenolic content of some Asian fruits. International journal of food science and technology
- 3.Kalt W and Kushad MM 2001. The role of oxidative stress and antioxidants in plant and human health introduction to the colloquium. Horticulture science
- 4.Prior R L and Cao G 2000 antioxidant phytochemicals in fruits and fruits . Diet and health implications Horticulture science 35: 588-592
- 5.Ansari N M, Houlihan L, Hussain B and pieroni A 2005 antioxidant activity of five fruits traditionally consumed by south Asian migrants in Bradford Yorkshire (UK) phytother. Res. 19,907-911
- 6.Naik Seema M, Jayaprakasha G.K, Singh RP (2008) Antioxidant activity of custard apple (Annona squamosa) peel and seed extract J. of food science technol. 45(4) 349-352

7.Mendis E Rajapaksa N, Kim SK (2005) antioxidant properties of radical scavenging peptide purified from enzymatically prepared fish skin gelatin hydrolysate j. of agric. Food chem. 53; 581-587

8.Sajitha Rajan S, Shilpa stheeh L, kishor mohan T C, Murugan K (2007). Value of ethnic foods in meeting antioxidants needs : the wild plant connection j. of food science technology. 44(4)394-396

9.Ramakrishna, B. V. and Jayaprakasha, G. K. and Jena, B. S. and Singh, R. P. (2008) *Antioxidant activities of roselle (Hibiscus sabdariffa) calyces and*

fruit extracts. Journal of Food Science and Technology, 45 (3). pp. 223-227

10.Pi-Jen Tsai, John McIntosh, Philip Pearce, Blake Camden, Brian R Jordan Anthocyanin and antioxidant capacity in Roselle (*Hibiscus Sabdariffa* L.) extract 2002 : 35(351-356)

11.Singh RP, Chidambara Murthy KN, Jayaprakasha GK. Studies on the antioxidant activity of pomegranate (*Punica granatum*) peel and seed extracts using in vitro models. J Agric Food Chem. 2002 Jan 2;50(1):81-6.