



# **ANALYSIS OF BIOACTIVE COMPOUNDS AND ANTIOXIDANT ACTIVITY OF RARE FRUITS OF BANGLADESH**

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Roll No.: 18/24

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**The thesis submitted in the partial fulfillment of the requirements for the degree  
of Masters of Science in Applied Human Nutrition and Dietetics**

**Department of Applied Food Science and Nutrition  
Faculty of Food Science and Technology  
Chattogram Veterinary and Animal Sciences University  
Chattogram-4225, Bangladesh**

**DECEMBER 2019**

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**Farzana Shabnam Punam**

**December, 2019**

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**This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made.**

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**DEDICATED TO MY  
RESPECTED AND BELOVED  
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**The Author**

**December, 2019**

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## List of abbreviations

Abbreviation	Elaboration
DPPH	2,2-Diphenyl-hydrazyl-hydrate
FAO	Food and Agriculture Organization
GABA	Gamma Aminobutyric acid
GAE	Gallic Acid Equivalent
IARI	Indian Agriculture Research Institute
SDA	Sabouraud Dextrose Agar
TAC	Total Anthocyanin Content
TPC	Total Phenolic Content
TFC	Total Flavonoid Content
TVC	Total Viable Count
TCC	Total Coliform Count
TE	Trolox Equivalent
MPN	Most Probable number
QE	Quercetin
VAT	Value added tax
AOA	Antioxidant activity
TA	Total Anthocyanin
TRAP	Total Radical Antioxidative Potential
ROS	Reactive Oxygen Species
CVD	Cardiovascular Disease
CVASU	Chattogram Veterinary and Animal Sciences University
LDL	Low Density Lipoprotein
FC	Folin Ciocates
TEAC	Trolox Equivalent Antioxidant Capacity
DW	Distilled Water
TBHQ	Tertiary Butylated Hydroxy Quinone
BHT	Butylated Hydroxy Quinone

## Abstract

Antioxidant activity and bioactive compounds are the major quality attributes of fruits owing to the evidence of many epidemiological studies from many parts of the world for reducing the risk of chronic degenerative diseases. Studies indicate that rare fruits are the rich sources of polyphenol, flavonoids, anthocyanin and antioxidants. The objectives of this studies are to determine the concentration of antioxidants, three bioactive compounds, analyze significant correlation. Antioxidant activity (AOA) was undertaken by DPPH(2,2-Diphenyl-hydrazyl-hydrate) assay. High activity being found in Katajamin (303 mg/100 g) and low activity observed in Pani Fol (55mg/100 g) and average was 130 mg/100 g of extract. The bioactive compounds are total polyphenol content (TPC) of the extract by the Folin-Ciocalteu method ranged from Ashari ( $10 \pm 2.19$ ) to Katajamin ( $41 \pm 34.98$ ) mg GAE/g (gallic acid equivalent) and average was 60 mg GAE/g. Total flavonoid content (TFC) was varied from Ashari ( $06 \pm 3.94$  mg QE/g) (Quercetin equivalent) to Katajamin ( $76 \pm 6.67$  mg QE/g) with average 42 mg QE/g using aluminum chloride colorimetric method. Again, anthocyanin most significant coloring pigments in fruits was highest in Bet Fol ( $102 \pm 3.46$  mg TA/100 g) and minimum was in Ashari ( $02 \pm 0.74$  mg TA/100 g). There was a positive correlation between antioxidant activity and bioactive compounds where a significant ( $P \leq 0.05$ ) correlation observed between AOC with TPC and total TFC. Again a strong positive correlations were find among three bioactive compounds where TPC and TFC were significant ( $P \leq 0.05$ ) but other two like TPC Vs TAC and TFC Vs TAC were not significant ( $P \geq 0.05$ ). So, important messages from this study are, majority of the rare fruits are the important sources of antioxidant and bioactive compounds and these fruits can be used in food processing industry for nutraceutical product development.

**Keywords:** AOA, TPC, TAC, TAC and nutraceutical product

