VIDYA - A JOURNAL OF GUJARAT UNIVERSITY

Peer-Reviewed, Multidisciplinary & Multilingual Journal

ISSN: 2321-1520 **E-ISSN:** 2583-3537

SEASONAL VARIATION OF PHYTOCHEMICALS IN MORINGA CONCANENSIS NIMMO FROM SOUTH GUJARAT HEAVY RAINFALL ZONE, TAPI, INDIA

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ABSTRACT

In India, **Moringa** (Moringaceae) has a single genus with 13 species. It's have distinct phytochemicals which are used in dietary ,medicinal and other benefits. Its leaves offer numerous therapeutic properties that can be used to cure diseases such as skin tumours, gastrointestinal disorders, fatigue, diabetes, fire burn wounds, jaundice, blood pressure reduction, and a variety of other ailments. The present research is focused on recording difference in Phytochemicals and Total Flavonoid Content of Agro- Climatic Zone of south Gujarat with its seasonal variations. The leaves of Moringa concanensis Nimmo contains higher quantity of flavonoid in Monsoon season as compared to summer.

Keyword: Moringa concanensis Nimmo ex Dalz.and Gibson, Phytochemical analysis, Total Flavonoid content. Tapi .

Abbreviations:, TFC- Total Flavonoid Content

INTRODUCTION

India is a collection of plant diversity. It is a gift provided from God for helping humans in their livelihood. Plant provide shelter, food, medicines and many other things. Moringa concanensis Nimmo is an evergreen tree upto eight feet height with leaves that are pinnate and obovate. It has Creamy white petals with red vein which is rich in wide variety of secondary metabolites which have antimicrobial properties and can treat microbial infections Moringa concanensis Nimmo is evergreen tree consisting bioresource of drugs used in traditional and folk medicines, modern medicines, nutraceuticals, pharmaceutical and have chemical composition for synthetic drugs. It has various uses, some parts of plant are used in treating ascites, venomous bites, rheumatism, painful swellings; bark in skin disease; leaf in anti-ulcer activity, as medicine to treat diabetes, alimentary diseases, skin tumor, jaundice, Fire burn wounds, and reducing blood pressure. Balamurugan, Vet al., (2013); fruit in dysentery and diarrhea and commonly used to cure cough and cold. (Vijayarajan, M., & Pandian, M. R. (2016). The most important bioactive constituents of plants are the secondary metabolites which include alkaloids, phytosterols, phenolic compounds tannins, and terpenoids. Arora, D. S., Onsare, J. G., & Kaur, H. (2013).

MATERIAL AND METHODOLOGY

Collection of Plant Materials

Leaves of Moringa concanensis Nimmo were collected from Tapi (District of South Gujarat area) in Summer and Monsoon season of the year 2020. Collected plant parts were well and not infected. Leaves were washed and shade dried before being ground into tiny particles with a mortar and pestle and stored in a vial for examination.

Preparation of Leaf Extract

Methanol Extraction

10 mg of Plant powder was taken and 100ml of methanol was added which was left for 24 hours at normal temperature than filtered with Whatman paper. Then lid was kept open so that methanol evaporates from extract and sample remains dry which will be used for Quantitative and Qualitative Analysis.

Phytochemical Analysis

Qualitative Phytochemical Analysis was done by using protocol of K. Sahira Banu et al., (2015)
Quantitative Phytochemical Analysis was done by using protocol of Nidal Jaradat, Fatima Hussen et al., (2015) for Total Flavonoid Content.

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RESULT AND DISCUSSION

Sr no.	Analysis name	Plant/Place name (Moringa) Summer Season	Plant/Place name (moringa) Monsoon Season
		Tapi	Tapi
1	**Cardiac glycosides:**		
	Keller – Killiani Test	+	++
2	Steroids	+	++
3	Flavonoid	+	++
4	Tannins	+	-
5	Saponins:		
	Foam Test	++	++
6	Coumarin	++	++
7	Quinone:	-	++
8	Phenol	++	++
9	Protein		
	Biurret Test	-	-
	Million's Test	++	++
10	Carbohydrates:		
	Benedict's	++	++
	Molisch's	-	-
11	Anthraquinone glycosides	-	-
12	Alkaloid:		
	Mayer's	++	++
	Dragendroff's	+++	++
	Wagner's	+	++

Results shows presence of Steroids, Cardiac glycosides, Flavonoid, Phenolic, Tannins, Saponins, Coumarin, Quinone, Carbohydrate, Alkaloids, Protein were present in Moringa concanensis Nimmo and Anthraquinone glycosides was absent

Total Flavonoid Content

The total flavonoid content in Methanol extract was presented and absorbance of Quercetin was shown at different concentrations 0.1,0.2,0.3,0.4, and 0.5. The Total Flavonoid Content of the leaf extracts was determined by calibration curve ($y = 6.28x - 0.154$; $R^2 = 0.9974$) prepared from the standard (Figure 1) and expressed in mg of quercetin equivalence (QE) per gram. The amounts of flavanoid compounds in the methanol extract were obtained from regression equation and the values were expressed in quercetin equivalence (figure 2 and 3).

Standard (miligram/ml)	**Absorbance (mean value) at λmax =415nm**
0.1	0.53
0.2	1.03
0.3	1.74
0.4	2.33
0.5	3.02
Standard curve of Quercetin indicated the equation of y = 6.28x - 0.154 and **R2** = 0.9974	
Tapi (TFC)	

Con	Summer 2020 (mg QE/ml)	Rainy 2020 (mg QE/ml)
0.1	0.932	1.114
0.2	1.623	1.987
0.3	2.238	3.161
0.4	2.722	3.921
0.5	3.494	4.574

Table 1: Tapi (South Gujarat Heavy Rainfall Zone)

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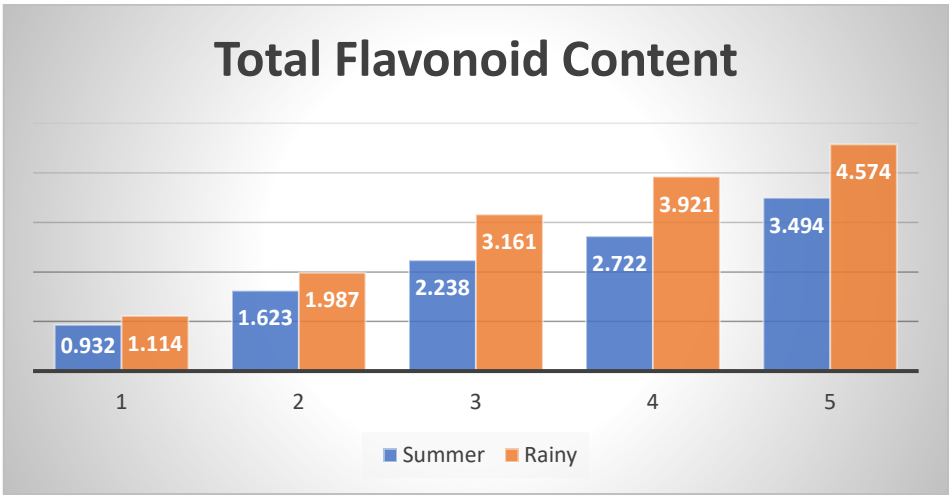

Figure 1: Shows Total Flavonoid Content of Rainy (Monsoon) and Summer

Summer and Monsoon season were selected for comparison in South Gujarat area where Heavy Rainfall occurs; Tapi. Table and figure 1 shows comparison of Summer and Monsoon season of South Gujarat where Heavy Rainfall occurs in Tapi. It shows higher amount of TFC at 0.5 concentration in Monsoon season i.e., 4.574 mg QE/ml as compared to summer season i.e., 3.494 mg QE/ml.

CONCLUSION

In leaves of Moringa concanensis Nimmo, preliminary analysis and Total Flavonoid Content were performed comparing Monsoon and Summer season taken from Agro climatic zones of southern Heavy Rainfall of Gujarat. Preliminary analysis of Moringa concanensis Nimmo leaves show presence of Tannins, Quinone, Cardiac glycosides, Flavonoids, Phenolic, Saponins, Alkaloid, Proteins, Steroids, Coumarin, Carbohydrate and absence of Anthraquinone glycosides. This result was seen in both Summer and Rainy season of South Gujarat where Heavy Rainfall occurs. Total Flavonoid Content of South Gujarat Heavy Rainfall zone shows high amount of flavonoid content in Monsoon season in compared to summer season.

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