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Estimation of Proximate Contents of Trigonella Foenum-Graecum Stem in Aurangabad City of Maharashtra, India

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ABSTRACT

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The wordTrigonella is (Greek) are derived from Foenum-graecum, refer to the genus Trigonella. Around the world, Trigonellafoenum-graecum is widely recognized as fenugreek. The genus Trigonella belongs to the Fabaceae family of green leafy vegetables, which are widely available in Europe and India. Due to its significant uses in daily life as food and medicine, it is now found in practically every region of the world. Trigonellafoenum-graecum is used to treat stomach issues and during pregnancy. It also has anti-diabetic, anti-oxidant, and anti-inflammatory qualities. The Trigonellafoenum-graecum plant is well-known in India for its use as a green vegetable, but its seeds also have some beneficial therapeutic qualities. Trigonella Foenum-Graecum is a natural product that contains a variety of organic moieties as well as elements like potassium, calcium, riboflavin, niacin, alkaloids, flavonoids, and vitamins-A, vitamins-C, and vitamins-K.The current study examines the proximate parameters of Trigonella Foenum-graecum, confirming its solubility in hot water, total ash value, and presence of moisture and ash content. Cold water, 1% NaOH (aq.), 1% HCl(aq.), and 1% CH3COOH (aq.) were found quantitatively.

Keywords: Trigonella Foenum Graecum, Stem, proximate analysis,

I. INTRODUCTION

The capital of Marathwada and a historically significant location in the Indian state of Maharashtra, Aurangabad boasts a far greener environment. The oldest and most abundant in flora and fauna are Aurangabad and its surroundings. Fenugreek plants can reach a height of one foot from a single, hollow, hairy stem that branches at the base. The green, leafy vegetable resembles clover leaves. Fenugreek is a valuable cover crop that helps fix nitrogen in the soil, which is important for plant growth. It is also recognized in the fields of chemical, pharmaceutical, and herbal medicine¹⁻⁹. Fenugreek has anti-inflammatory¹⁰, anti-microbial¹¹, and anti-diabetic



properties¹². It also boosts milk production in nursing mothers, lowers blood pressure, and has many other medical uses¹³.

Our research laboratory has conducted a vast amount of work on natural products, with a focus on proximate, phytochemical, physiochemical, and spectroscopical studies on a variety of plants9–13. The drug's solubility affects its absorption, transmission, effects, moisture content, and ash content. Proximate analysis provides data on the sample's solubility in various solvents, moisture content, and ash content. Investigating the proximate parameters in Trigonella Foenum-Graecum from Karmad village in Aurangabad (Maharashtra pin code 431007) is highly interesting in light of all these facts.

II. MATERIALS AND METHODOLOGY

All chemicals used during the research work were of A.R. grade. Freshly prepared solutions were used throughout the research work. The solvents were purified by known literature methods¹⁴.

Sample Preparation

On July 15–17, 2022, the plants were picked from Mr. Shaikh Zuber's farm in Karmad, Aurangabad, Maharashtra State, India. To get rid of dirt and dust from the plants, they were first cleaned with tab water and then twice-distilled water. After being cut off from the stem and dried. To create a fine powder, dried leaves were crushed in a mortar and pestle. Known literature methods are employed to use this fine powder in proximate studies¹⁵⁻¹⁷.

Proximate Analysis

The determination of physicochemical parameters such as moisture content, total ash value, acid-insoluble ash value, and solubility of the sample was carried out by the known literature methods¹⁸⁻²⁰. Solubility of the sample was checked in cold water, hot water and 1% NaOH(aq), HCl(aq), CH₃COOH (aq) solution. Percentage of moisture and ash contents and acid insoluble ash are determined by using following formula,

Moisture Content = Weight of sample taken – Weight of sample after treatment,

Loss of weight of sample

% of moisture =

_____ x 100

Weight of sample taken

while, Percentage of solubility is determined by using following formula,

% of Solubility = (loss of weight of sample)/(weight of sample taken) $\times 100$

The results obtained are given in **Table No-1**

Sr. No	Proximate Parameters	Loss of weight	Amount of sample taken (in grams)	%
		of sample		
1	Moisture content	0.848	1	84.8
2	Total ash content	0.079	1	7.90
3	Acid insoluble ash value	0.31	1	31.00
4	Coldwater solubility	0.41	1	41.49
5	Hot water solubility	0.28	1	28.00
6	NaOH(aq) solubility	0.34	1	34.00
7	HCl(aq) solubility	0.39	1	39.00
8	CH ₃ COOH(aq) solubility	0.112	1	11.2

Table No-1



III.RESULT AND DISCUSSION

The moisture content in any part of plant gives evidence for an activity of water-soluble enzymes and coenzymes essential for the metabolic activities of that plant and it is detected from Table No.-1 that, total moisture content in leaves of was found to be 84.8% which is good for metabolic activities in the plant growth and progress of the plant. It was found that the total ash content found from dry stem pieces is 7.9% and acid insoluble ash value is 31% which are good and these proximate parameters of plant organs are useful for the determination of the mineral contents. Coldwater solubility and hot water solubility were found to be 41.49% and 28% respectively; these proximate parameters will give information regarding water soluble neutral, acidic, basic and hydrocarbons present in the samples in herbal chemistry. HCl solubility and CH₃COOH solubility were found to be 49.00% and 11.2% respectively, these proximate parameters gave information regarding basic organic components present in the sample and NaOH solubility was found to be 34.00% which gave information regarding acidic organic components present in the sample.

IV.CONCLUSION

The stem of *Trigonella Foenum-Graecum* from Karmad (PIN Code 431007) in the District Aurangabad of Maharashtra showed good proximate parameters according to the good results of the proximate analysis. Additionally, *Trigonella Foenum-Graecum* ot at Karmad (PIN Code 431007) in District Aurangabad, Maharashtra have natural physicochemical, physiological, and anatomical activities that make them useful for medicinal purposes.

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