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## Studies In The Proximate Analysis Of *Trigonella Foenum-Graecum* Leaves From Karmad (PIN Code 431007) In Aurangabad City Of Maharashtra, India

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### Abstract

The genus *Trigonella* is a greek word which means “three angled” and the word fenugreek which is derived from *Foenum-graecum* means Greek hay. *Trigonella Foenum-Graecum* is well known as fenugreek commonly throughout the world. *Trigonella* is genus from the family Fabaceae which is green leafy vegetable commonly found in India and Europe. Today it is found in almost every part of the world due to its important applications in daily life as food as well as in medicinal purpose. *Trigonella Foenum-Graecum* has properties such as anti-diabetic, anti-oxidant, anti-inflammatory properties as well as it is used in stomach problems and during pregnancy. *Trigonella Foenum-Graecum* plant is famous in India for its purpose as green vegetable where as its seeds are also shows good medicinal properties. The natural products found in *Trigonella Foenum-Graecum* various organic moieties, elements present in it such as Vitamin-A, Vitamin-C, Vitamin-K, alkaloids, flavanoids, riboflavin, niacin, saponin, potassium, calcium and some other elements. The current study deals with the analysis of proximate parameters in *Trigonella Foenum-Graecum* which confirms the presence of moisture and ash content as well as total ash value and solubilities in hot water, cold water, 1% NaOH (aq), 1% HCl (aq), and 1% CH<sub>3</sub>COOH (aq) were found quantitatively.

**Keywords:** *Trigonella Foenum Graecum*, proximate analysis.

## Introduction

Aurangabad is the Capital of Marathwada and historical place in Maharashtra state of India which is having much greener environment. Aurangabad is oldest and associated full of flora and fauna around it. Fenugreek can plant grow upto one feet in height from a single hairy hollow stem, with stems that branch at base and the greeny leafy vegetable looks similar to clover leaves. Fenugreek is useful cover crop to fix nitrogen in the soil, a critical nutrient in the plant growth and it possesses identity in herbal drug, pharmaceutical and chemical sciences<sup>1-8</sup>. Fenugreek shows anti-diabetic, anti-microbial, anti-inflammatory, increases milk in breast feeding women, useful in blood pressure control and also in various other medicinal purpose. Enormous work on natural products was carried out in our research laboratory, especially on proximate, phytochemical, physiochemical and spectroscopical studies on various plants<sup>9-13</sup>. Solubility of drug hampers the properties such as absorption transmission and drug effects and moisture, ash content. Proximate analysis gives information of moisture, ash content and solubility of sample in different solvents. Considering all these facts it is of great interest to investigate the proximate parameters in *Trigonella Foenum-Graecum* from Karmad village place in Aurangabad (PIN CODE 431007) in Maharashtra.

## 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 methods<sup>14</sup>.

## Sample Preparation

The plants were collected from farm of Mr Shaikh Zuber's of Karmad of Aurangabad in Maharashtra State of India on 15th to 17th July 2022. The collected plants were first washed with tap water and then with double distilled water to remove mud and dust on the plant. The leaves were separated out from stem and shade dried. Dried leaves were taken in mortar pestle and crushed to prepare fine powder. This fine powder is used for proximate studies by known literature methods<sup>15</sup>.

## 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 methods<sup>15</sup>. Solubility of the sample was checked in cold water, hot water and 1 percent NaOH(aq), HCl(aq), CH<sub>3</sub>COOH(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,

$$\% \text{ of moisture} = \frac{\text{Loss of weight of sample}}{\text{Weight of sample taken}} \times 100$$

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

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

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

**Table No-1**

Sr.No	Proximate Parameters	Loss of weight of sample	Amount of sample taken (in grams)	%
1	Moisture content	0.879	1	87.9
2	Total ash content	0.081	1	8.10
3	Acid insoluble ash value	0.33	1	33.00
4	Coldwater solubility	0.43	1	43.50
5	Hot water solubility	0.27	1	27.00
6	NaOH(aq) solubility	0.36	1	36.00
7	HCl(aq) solubility	0.41	1	41.00
8	CH <sub>3</sub> COOH(aq) solubility	0.114	1	11.4

### Result and Discussion

The moisture content in any part of plant gives information for an activity of water-soluble enzymes and coenzymes required for the metabolic activities of that plant and it is observed from Table No.-1 that, total moisture content in leaves of was found to be 87.9% which is good for metabolic activities in the plant growth and development of the plant. It was found that the total ash content obtained from dry leaves is 8.1% and acid insoluble ash value is 33% 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 43.50% and 27% 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 CH<sub>3</sub>COOH solubility were found to be 41.00% and 11.4% respectively, these proximate parameters gave information regarding basic organic components present in the sample and NaOH solubility was found to be 36.00% which gave information regarding acidic organic components present in the sample.

### Conclusion

Results obtained during proximate analysis were good and it can be conclude that, in leaves of *Trigonella Foenum-Graecum* of Karmad (PIN Code 431007) of District Aurangabad in Maharashtra contain good proximate parameters. Also, the physicochemicals as well as physiological and anatomical activities of *Trigonella Foenum-Graecum* herbs at Karmad (PIN Code 431007) of District Aurangabad in Maharashtra are in natural form and can be use for medicinal purpose.

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