

ESTIMATION OF TOTAL FATS IN *SESBANIA GRANDIFLORA* L.

Biological Science

Dr. Urmila Sarkar

Assistant Professor, Department of Botany, Kirti M. Doongursee College of Arts, Science and Commerce, Dadar, Mumbai 400028, India.

Sensei Surendra Sawardekar*

Assistant Professor, Department of Botany, Kirti M. Doongursee College of Arts, Science and Commerce, Dadar, Mumbai 400028, India *Corresponding Author

ABSTRACT

Sesbania grandiflora L. commonly known as west Indian pea is an important fodder plant in agroforestry. This species is enriched with full of economical and ethno-medicinal important benefits for sustaining the biodiversity of ecosystem of environment. Hence, a plant being of agricultural importance there have a wide range of opportunities for exploration of its study in terms of research and development.

The current research attempt is made to study the effectivity of seeds for its nutritional importance. However, researches completed on fatty compounds for tocopherols and phytosterols compound enlightens the importance of fatty component in the seed as a prior reserve material. Attempts made for estimation of total fats from the seeds of *Sesbania grandiflora* L. lead a successful conclusion for consumption rate as per the requirement for an individual.

KEYWORDS

Sesbania grandiflora L., Total Fats, Daily Reference Intake.

INTRODUCTION

Sesbania grandiflora L. belongs to Family: Fabaceae; is widely used in Indian folk medicine. *Sesbania grandiflora* has the common names of Agati, Corkwood Tree and West Indian Pea. (Lavanya P., Hari V., Pavithra T and Arunakumari T.). *Sesbania grandiflora* Linn. (Family: Fabaceae) is widespread distributed in West Bengal, Assam, Karnataka and North-Eastern parts. (Abbs Fen Reji and N. Rexin Alphonse).

The plant contains rich in tannins, flavonoids, coumarins, steroids and tri terpenes, isoflavonoids, isovestitol, medicarpin, and sativan and betulinic acid. (Lavanya P., Hari V., Pavithra T and Arunakumari T.). It thrives well in hot, humid areas and can grow like weeds. (Pradip Karmakar, Vikas Singh, R.B. Yadava, B. Singh, Rameswar Singh and Motilal Kushwaha). Based upon the nutritional importance, *Sesbania grandiflora* L. is considered to be one of an important plant for its bioactive components. This species is usually propagated by seeds and cuttings of stem.

According to the Integrated Taxonomic Information System (ITIS) report for *Sesbania grandiflora* L., Taxonomic serial number 26953. The given below is the nomenclature and its hierarchal levels.

Taxonomy (ITIS Report)

Taxonomic serial number: 26953

Kingdom	:	Plantae
Subkingdom	:	Viridiplantae
Infrakingdom	:	Streptophyta
Super division	:	Embryophyta
Division	:	Tracheophyta
Subdivision	:	Spermatophytina
Class	:	Magnoliopsida
Super order	:	Rosanae
Order	:	Fabales
Family	:	Fabaceae
Genus	:	<i>Sesbania</i>
Species	:	<i>Sesbania grandiflora</i> L. Pers.

Leaves, seeds, pods and flowers of *Sesbania*

grandiflora are edible. (Pradip Karmakar, Vikas Singh, R.B. Yadava, B. Singh, Rameswar Singh and Motilal Kushwaha). Different plant parts of agathi viz., the young leaves, giant white flowers, seeds, and tender pods are generally used in the preparation of several dishes. (Pradip Karmakar, Vikas Singh, R.B. Yadava, B. Singh, Rameswar Singh and Motilal Kushwaha).

Due to its importance for a wide range of nutritional features a current research attempt is made to study an estimation of total fats from the seeds of *Sesbania grandiflora* L. The experimental research successfully aims for evaluation of total fats with reference to the Daily Intake of fats as a source in diet.

MATERIALS AND METHOD

In the year 1879 a technical laboratory instrument known to be a *Soxhlet extractor* was invented by **Franz von Soxhlet**. This instrument is specifically used in extraction of lipid compounds from solid material. However, Plant material soluble in suitable solvent is also allowed to be extracted by a Soxhlet extractor. Similarly, the method for extraction of (lipid) 'fats' molecules for its total estimation is successfully carried during research experimentation.

The preparation of test sample of seeds of *Sesbania* was followed from the reference of: A.O.A.C 17th edn, 2000. Official method 981.11 Oils and Fats – Preparation of test sample. The sample grounded is mixed with anhydrous Sodium sulphate in the ratio of 4:1. Hexane was used as a solvent in this method. The percentage of fat content determined is based on the difference of the weight of a flask with the concentration of the sample upon the original weight of the sample x 100.

The analysis of the fat content was carried in a triplet for 1 gm *Sesbania grandiflora* L. seeds.

RESULTS AND DISCUSSION

The average amount of total fats from a triplet of 1 gram of *Sesbania grandiflora* L. seeds was observed to be **0.044%**. Hence, the total fats in 100gm of *Sesbania grandiflora* L. is accounted to be **4.40%**.

S. grandiflora seed oil has a very good potential for edibles and industrial purposes as well as mounting a nutritional balance same like other commonly used vegetable oils. (Huma Shareef, Ghazala H. and Shakeel Ahmad *et. al.*)

The Daily Reference Intake (DRI) as per the report from a “**National Academies Press -National academics of Sciences, Engineering, Medicine.**” Explores a proper specification needed for consideration from the table of one own's requirement of fats intake in a daily diet through a source of *Sesbania* seeds.

- 1) Recommended Dietary allowances (RDAs).
- 2) Adequate Intake (Ais).
- 3) Acceptable Macronutrient Distribution Range (AMDR).

The values of Acceptable Macro nutrient Distribution Range is expressed in terms of Percentage calories. The Daily Reference Intake values specifies the amount of total fats to be consumed accordingly.

Whereas the Recommended Dietary Allowances (RDAs) and Adequate Intake (AIs) specifies the necessary consumption rate as per the parameter of an individual.

CONCLUSION

The research experiment for estimation of total fats from the seeds of *Sesbania grandiflora* L. successfully concludes its usefulness in a dietary food for consumption of required fats in-order to build proportionate health.

Nutrient	Function	Life Stage Group	RDA/AI ^a g/d	AMDR ^a	Selected Food Sources	Adverse effects of excessive consumption
Total Fat	Energy source and when found in foods, is a source of <i>n</i> -6 and <i>n</i> -3 polyunsaturated fatty acids. Its presence in the diet increases absorption of fat soluble vitamins and precursors such as vitamin A and pro-vitamin A carotenoids.	Infants			Butter, margarine, vegetable oils, whole milk, visible fat on meat and poultry products, invisible fat in fish, shellfish, some plant products such as seeds and nuts, and bakery products.	While no defined intake level at which potential adverse effects of total fat was identified, the upper end of AMDR is based on decreasing risk of chronic disease and providing adequate intake of other nutrients. The lower end of the AMDR is based on concerns related to the increase in plasma triacylglycerol concentrations and decreased HDL cholesterol concentrations seen with very low fat (and thus high carbohydrate) diets.
		0–6 mo	31*			
		7–12 mo	30*			
		Children				
		1–3 y		30-40		
		4–8 y		25-35		
		Males				
		9–13 y		25-35		
		14–18 y		25-35		
		19–30 y		20-35		
		31-50 y		20-35		
		50-70 y		20-35		
		> 70 y		20-35		
		Females				
		9–13 y		25-35		
		14–18 y		25-35		
		19–30 y		20-35		
		31-50 y		20-35		
		50-70 y		20-35		
		> 70 y		20-35		
		Pregnancy				
		≤ 18 y		20-35		
		19-30y		20-35		
		31-50 y		20-35		
		Lactation				
		≤ 18 y		20-35		
		19-30y		20-35		
		31–50 y		20-35		

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