

## Research Article

## Preliminary screening of phytochemicals in Agatikeerai (*Sesbania grandiflora*)

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### ABSTRACT

The preliminary phytochemical analysis was performed in leaves, stem and seeds of different extracts in *Sesbania grandiflora*. From the observation, Agatikeerai - the Green leafy vegetable (GLV) with regards to phytochemicals had strong presence of carbohydrates, sterols, alkaloids, quinones and terpenoids. On the contrary slight presence was reported for proteins, phenols, saponins, leucoanthocyanidines, glycosides, flavonoids, and tannins. The phytochemicals like catechol, cyanogenic glycosides, anthocyanin, volatile oil, and lignin were absent. Overall, from this study concludes that the selected GLV is the source of phytonutrients encourage regular eating will validate healthy life.

**Keywords:** *Sesbania grandiflora*, Carbohydrates, Proteins, Chlorophyll, Carotenoids.

### INTRODUCTION

Plant secondary metabolites referred to as phytochemicals found as abundant source known to possess various pharmaceutical and nutraceutical properties in their extracts which is used for centuries throughout the world in traditional cures, herbal remedies and as homeopathic medicine. The selected green leafy vegetable **Agatikeerai (*Sesbania grandiflora*)** has various uses in traditional medicines for headache, swellings, nasal problem, anemia, congenital bronchitis, pains, liver disorders and tumors. The leaves in various preparations are a potential remedy for bruises, epileptic fits and leprosy eruptions. The present study probe to identify the potential phytochemicals in Agatikeerai (*Sesbania grandiflora*) which paves the way for research in its functional arena. (Gowri *et al.*, 2010).

### MATERIALS AND METHODS

Agatikeerai seeds were collected from Rose garden nursery, Coimbatore and sowed. After 35 days of its growth seeds, leaves, stem were collected and preparation of aqueous, acid, and alkaline extract were carried out<sup>1, 4</sup>. Qualitative analysis of phytochemicals in seed, stem and leaves in the extracts were performed<sup>2</sup>.

### RESULTS AND DISCUSSION

#### Preliminary phytochemical analysis

The preliminary phytochemical analysis was performed in leaves, stem and seeds of the GLV after subjecting them to aqueous, acid and alkali extracts. With these extracts it was recorded that the strong presence of carbohydrates, sterols, alkaloids, quinones and terpenoids. On the contrary slight presence was reported for proteins, phenols, saponins, leucoanthocyanidines, glycosides, flavonoids, and tannins. The phytochemicals like catechol, cyanogenic glycosides, anthocyanin, volatile oil, and lignin were absent.

It is evident from Table I that the leaves, stem and seeds of the agati were found to have higher level of carbohydrates. On the contrary, protein level was recorded to be moderately present in all the parts. Similarly the presence of carbohydrates and proteins were reported in *Origanum vulgare* and *Althea officinalis* by Babu *et al.* (2007) based on the preliminary phytochemical analysis carried out.<sup>2</sup>

**Table I: The qualitative analysis of carbohydrate and protein in *Sesbania grandiflora***

Nutrients	<i>Sesbania grandiflora</i>		
	Leaf	Stem	Seed
Carbohydrate	++	++	++
Protein	+	+	+

++ = Strong presence    + = Moderate presence

Table II reveals that *Sesbania grandiflora* has high content of phenols, sterols and alkaloids whereas the flavonoids occur in moderate levels in this GLV. The catechol was found to be completely absent. The same case was reported in *Hibiscus rosa sinensis* and *Solanum nigrum*. Siddiqui *et al.*, (2009) stated based on the phytochemical analysis that *Hibiscus rosa sinensis* has high content of phenols, sterols and alkaloids. Tawaha *et al.*, (2007) reported moderate presence of flavonoids and a complete absence of plant catechols in *Solanum nigrum*.<sup>6,7</sup>

**Table II: The qualitative analysis of phenols, catechol, sterols, flavonoids and alkaloids of *Sesbania grandiflora***

Nutrients	<i>Sesbania grandiflora</i>		
	Leaf	Stem	Seed
Phenols	+	++	+
Catechol	—	—	—
Sterols	++	++	+
Flavonoids	+	+	+
Alkaloids	++	+	++

++ = Strong presence    + = Moderate presence  
— = Absence

Table III represents the qualitative analysis of glycosides, cyanogenic glycosides, saponins and quinones in the leaves, stem and seeds of the GLV.

It is evident from the table below that GLV was found to have high content of quinones where as saponins and glycosides were in moderate amounts. The cyanogenic glycosides are absent in this GLV. Asaolu *et al.*, (2010) stated that *Cnidiosculous aconitifolius* has high content of saponins and quinones but glycosides are in moderate amounts. Barros *et al.*, (2011) reported the absence of cyanogenic glycosides in *Persea americana*<sup>1,3</sup>.

**Table III: The qualitative analysis of glycosides, cyanogenic glycosides, saponins and quinones in *Sesbania grandiflora***

Nutrients	<i>Sesbania grandiflora</i>		
	Leaf	Stem	Seed
Glycosides	+	—	+
Cyanogenic Glycosides	—	—	—
Saponins	+	+	+
Quinones	++	++	++

++ = Strong presence    + = Moderate presence  
— = Absence

It is evident from the table that the GLV-Agatikeerai registered a high content of

terpenoids and moderate presence of tannins whereas anthocyanin, volatile oils and lignin were reported to be absent. The leucoanthocyanidines were moderately present only in the stem and seeds of Agatikeerai which resembled its presence of terpenoids and tannins and absence of anthocyanin, lignin and volatile oils in *Cynodon dactylon* reported by Gorinstein *et al.*, (2009).<sup>4</sup>

**Table IV: The qualitative analysis of anthocyanin, leucoanthocyanidines, tannins, volatile oils, lignin and terpenoids in *Sesbania grandiflora***

Nutrients	<i>Sesbania grandiflora</i>		
	Leaf	Stem	Seed
Anthocyanin	—	—	—
Leucoanthocyanidines	—	+	+
Tannins	+	—	+
Volatile oils	—	—	—
Lignin	—	—	—
Terpenoids	++	++	++

++ = Strong presence    + = Moderate presence  
— = Absence

## CONCLUSION

Findings of this study overall concludes that the selected GLV are the source of phytochemicals, which are interesting source of dietary fibers. The results obtained, thus validate this GLV can be used as dietary supplement regularly as functional food which encourage eating them every day which promotes health benefits. This paper thus calls for the research of evaluating quantitative analysis of phytochemicals.

## REFERENCES

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