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Effect of Chemical Mutagen on protein contain of *Sesbania sesban* Linn.

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Abstract
Sesbania sesban Linn.is one of the most important leguminous forage crops. It is widely distributed in India and other tropical countries. The plant contain many primary and secondary metabolites like as a carbohydrate, proteins, fats, steroids, calcium. In present investigation of mutagenic activity on protein contain of *Sesbania sesban* Linn.

Keywords: mutation, chemical mutagen

Introduction
After the Compositae and Orchidaceae family the Leguminosae (or Fabaceae) family is the third biggest plant family which mainly consist 17,000 to 18,000 species and 600 to 650 genera. The Leguminosae family are grouped under the member of order Fabales (Cronquist, 1981) [1]. The Leguminosae family is distinguish into three other sub families according to their arrangement namely Papilionoideae, Mimosoideae and Caesalpinioideae (Polhill and Raven, 1981) [6]. Among these, Papilionoideae is the highest, that mainly consist of 11,000 to 12,000 species and 400 to 450 genera as well as it contain more economic value. *Sesbania sesban* Linn. is native commonly throughout Africa and in Asian countries like India, Malaysia, Indonesia and Philippines (Sandeep, *et al*. 2014) [4]. *Sesbania sesban* Linn. is a narrow-crowned, deep-rooting single or multi stemmed shrub or small tree, fast-growing, perennial legume tree, 1-7 m tall. It has a narrow root system and its stems may reach 12 cm in diameter. Leaves paripinnate, long, narrow; leaflets in many pairs, rounded or oblong, usually asymmetric at the base, often glaucous; stipules minute or absent. Inflorescences are long racemes bearing 2 to 20 flowers attractive, yellow, red, purplish, variegated or streaked, seldom white, large or small on slender pedicels, solitary or paired in short axillary racemes, usually unpleasantly scented; all petals long clawed, standard orbicular or obovate. Pods pale yellow, linear, usually 10-20 cm long, cylindrical or compressed, rarely oblong; up to 30 to 40 seeds are found in a pod; seeds oblong or sub quadrate, small, light green or dark green mottled with black (Heering *et al*., 1992) [2]. Contain of protein in *Sesbania sesban* Linn. is 20 to 23 percent. It is recommended as fodder in India for animal due to its high protein contain. It mainly increase meat and milk production in animal. It has an ability to fix atmospheric nitrogen. In resent the plant are generally introduce for making compost, bio pesticide and bio fertilizer, as the plant possess antibacterial and antifungal property. In some part of India *Sesbania sesban* Linn. are used as a food (Gomase, 2012) [7]. The plant generally grow from tropical to subtropical area of India, mostly grow near roadside. Sesban is used as forage (grazed or cut-and-carried), and as green manure. It provides good quality firewood and fiber for cordage.

Mutation breeding, a much heralded short cut breeding method, brings novel genotypes through heritable changes in genotype and phenotype of a particular trait. Plant breeding particularly mutagenesis (Physical and Chemical) is a creative work essential to solving the global problem of food and fodder provision. The use of chemical mutagen increases yield of crop in unit area and it became a solution on the problem of providing food and fodder to the rapidly increasing world population. The use of chemical mutagens in farming is more suitable for improving the variety of plants than that of conventional method. Enrichment of the frequency and spectrum of mutations in a predictable manner and thereby achieving desired plant characteristics through mutagenesis is an important goal of mutation research. In the mutation induction programme, the choice of an effective and efficient mutagen will certainly increase the possibility of recovering desired mutations. Sodium azide, a chemical mutagen has become important tool to enhance agronomic traits of crop plants (Salim *et al*., 2009) [8]. In the present study, the effects of SA was studied on Protein contain of *Sesbania sesban* Linn. (Das *et al*. 2014) [3].

Material and Method
The experimental material selected for the present study is *Sesbania sesban* Linn. Collected form Kopargaon, Dist. Ahmednagar, Maharashtra. The variety is a desi type; commercially and widely cultivated extensively in various parts of Maharashtra.

A chemical mutagen, Sodium azide (SA), was used in the present investigation to Effect on Protein contain. Test solutions of different concentrations of SA (0.01%, 0.02%, 0.03%, 0.04%, 0.05%) were prepared. seed wash with tap water and then wash with distilled water. After washing the seed was sterilised by 0.01% $Hgcl_2$, sterilisation take place for less than one minutes. Immediately those seeds wash with distilled water. One hundred seeds were used for each

treatment. The seeds were immersed in SA for 4 hours to initiate pre-soaking at room temperature upto 35^0C. The seeds treated with chemical mutagen were thoroughly washed under distilled water. The germination paper cut by adjusting the size of petri plate. The germination paper placed in petriplate and make it wet. The seeds from each concentration were placed in petri plate. These type of arrangement based on following top up paper method using petriplate.

Fig 1: Presoaking Treatment of Seed.

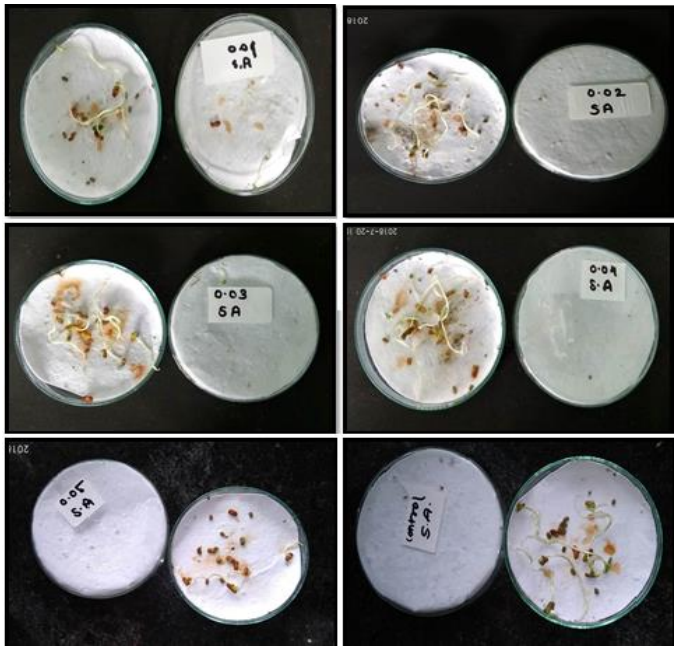

Fig 2: germination and seedling growth

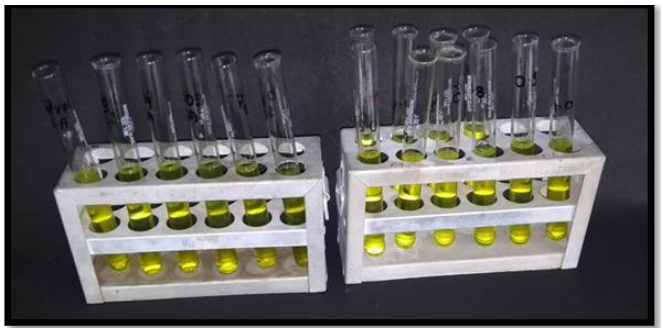

Fig 3: Protein estimation by Lowry's method

Seed germination and Root and shoot length

After the four days of experiment germination was measured and after the eight days of treatment root, shoot and total seedling growth can be measured.

Protein estimation

Seedlings washed with running tap water Followed by double distilled water. It was subjected to extraction by phosphate buffer. 10gm of each Seedlings were macerated with 50ml of phosphate buffer using mortar and pestle and filtered using what man filter paper by centrifuging at 4000 rpm for 20 minutes by discarding the palate. The above steps were performed for each treated seedling samples separately until a clear extract was obtained. The extract was stored in refrigerator for further use.

Result and Conclusion

Table 1: seed germination, Root and shoot length

Sr. No.	Treatment of SA	Seed Germination (%)	Root Length (cm)	Shoot Length (cm)	Total Seedling Height(cm)
1.	0.0 %	98	3	9	12
2.	0.01 %	90	2.5	8.5	10
3.	0.02 %	70	1.5	7.5	9
4.	0.03 %	55	1.5	7	8.5
5.	0.04 %	41	2	6.5	8.5
6.	0.05 %	26	4	11.5	15.5

Protein concentration: calculating the protein contain of various treated Seedling.

Table 2

Sr. No.	Treatment	Protein Contain (mg/ml)
1	control	0.52
2	0.01	0.52
3	0.02	0.88
4	0.03	0.91
5	0.04	0.91
6	0.05	1.20

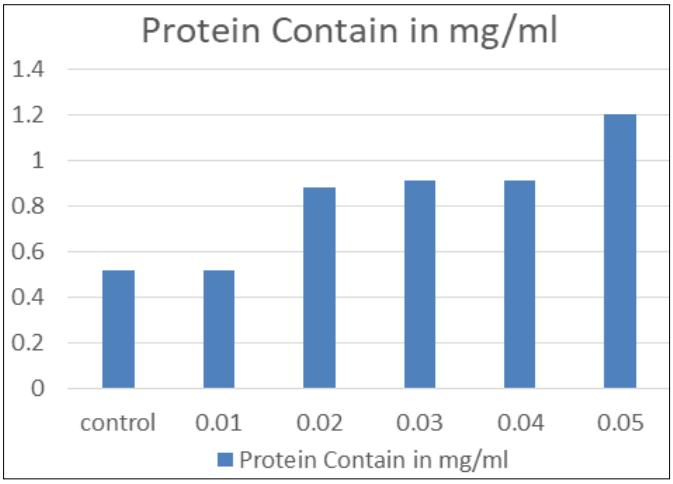

Fig 4

The protein concentration in *Sesbania sesban* Linn. was observed as 1.20 mg/ml is more in the seeds which were treated with chemical mutagen, as compare to non-chemically

treated seeds. Approximately two times protein concentration increases.

The effect of chemical mutagen on protein contain of *Sesbania sesban* Linn. Gives best result as the protein contain increases rapidly by increasing concentration. These effect will be make suitable for utilization of good quality of food and fodder, ultimately gives more economical value.

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