SUMMARY

When seeds of plants are treated with different concentrations of NaCl i.e. $1 \times 10^{-1}$M to $1 \times 10^{-10}$M, thereafter, kept in dark for seed germination and seedling growth, the key observations are:

**Seed germination**

- Higher doses of NaCl e.g. $1 \times 10^{-1}$M and $1 \times 10^{-2}$M and $1 \times 10^{-6}$M cause inhibition in seed germination in all the plant cultivars i.e. *Triticum aestivum* cv. PBW-502 and WH-711, *Pisum sativum* cv. AP-3 and Aparana, *Cicer arietinum* cv. C-235 and Surya and * Hordeum vulgare* cv. BH-393 and K-508 except *Phaseolus aureus* cv. K-851, being maximum in *P. aureus* at $1 \times 10^{-5}$ M concentration of NaCl.
- The seed germination is absent in both of cultivar i.e. Pusa bold and PT-303 of *Brassica compestris* at the dose $1 \times 10^{-1}$M of NaCl.

**Seedling growth**

- An inhibited seedling growth of * Triticum aestivum* cv. PBW-502 and WH-711 is observed at treatment of $1 \times 10^{-1}$M and it is promoted at $1 \times 10^{-10}$M NaCl in cultivar PBW-502, being maximum at treatment of $1 \times 10^{-9}$M of NaCl in cv. WH-711.
- The increase in fresh weight and dry weight of coleoptile is observed in doses of $1 \times 10^{-5}$ to $1 \times 10^{-10}$ M in *Triticum aestivum* cv. PBW-502.
- The promotory response in seedling growth of * Triticum aestivum* cv. WH-711 is visible at the dose of $1 \times 10^{-10}$ and $1 \times 10^{-9}$ M of NaCl.
- All the doses of NaCl ($1 \times 10^{-1}$M to $1 \times 10^{-10}$M) show the decline response in seedling growth of * Hordeum vulgare* cv. K-508.
- An inhibition of seedling growth of *Pisum sativum* cv.AP-3 is observed at treatment of all doses ($1 \times 10^{-10}$M to $1 \times 10^{-1}$M) of NaCl except $1 \times 10^{-3}$M and
1x10⁻⁹ M. While in *Pisum sativum* cv. Aparana, doses show the variable response.

- 1x10⁻¹ M, 1x10⁻¹⁰ and 1x10⁻⁹ M doses of NaCl cause inhibition in seedling growth of *Cicer aeritinum*.
- All the doses of NaCl inhibit the seedling growth of *Brassica compestris* cv Pusa bold.
- In *Brassica compestris* cv. PT-303, the dose 1x10⁻⁷ M show a little increment in growth of radical.
- A decline in growth of hypocotyl of *Phaseolus aureus* cv. K-851 is found.

Doses of NaCl are selected for further studies to analyze seedling growth response at 4th, 6th and 8th days of radicle emergence.

- 1x10⁻¹ dose of NaCl cause inhibition in seedling growth of *Triticum aestivum* cv. PBW-502 and WH-711, * Hordeum vulgare* cv. K-508, *Pisum sativum* cv. AP-3 and *Phaseolus aureus* cv. K-851, it is more pronounced at 8th day when growth proceed from 4th to 8th day.
- While in *Cicer arietinum* cv. C-235 and Surya, dose 1x10⁻⁹ M of NaCl cause an inhibition in seedling growth that is more clear as the age increase in 4th to 8th day.
- 1x10⁻⁴ M and 1x10⁻² M cause reduction in seedling growth of *H. vulgare* cv. BH-393 and *P. sativum* cv. Aparana respectively, being maximum at 8th day.

- When the age of seedlings increase 4th to 8th days it is clear that 1x10⁻⁶ M and 1x10⁻³ M dose of NaCl cause inhibition in seedling growth of *Brassica compestris* cv. Pusa bold and PT-303 respectively.

- 1x10⁻⁹ M dose of NaCl cause promotion in seedling growth of *Triticum aestivum* cv. WH-711 and *Pisum sativum* cv. AP-3 and Aparana, being maximum at 8th day.
Increased seedling growth of *Phaseolus aureus* cv. K-851 and *Brassica kompestris* cv. PT-303 is noticed at treatment of $1 \times 10^{-7}$ M of NaCl, being maximum at 8th day.

$1 \times 10^{-5}$ M dose of NaCl cause promotion in seedling growth of *Cicer arietinum* cv. C-235 and Surya, being clear at 8th day.

Increment in fresh weight of radicle of *H. vulgare* cv. BH-393 is visible at treatment of $1 \times 10^{-4}$ M NaCl, being clear at 8th day.

Similarly seeds of plants are imbibed with different concentrations of IAA i.e. $1 \times 10^{-4}$ M to $1 \times 10^{-10}$ M, thereafter, kept in dark for seed germination and seedling growth. The main observations are:

**Seed germination**

- The seed germination and seedling growth are completely retarded at treatment of $1 \times 10^{-1}$ M in all the plants except *H. vulgare* cv. BH-393 and K-508. While the seed germination is only visible in *H. vulgare*, cv. BH-393 and K-508, *Pisum sativum* cv. Aparana, and *Brassica kompestris* cv. PT-303 and Pusabold at the treatment of $1 \times 10^{-2}$ M dose.
- 100% seed germination is found in all the dose of IAA treated seeds of *Hordeum vulgare* cv. K-508.
- Inhibited seed germination in *P. sativum* (AP-3 and Aparana) and *C. arietinum* (C-235) or *T. aestivum* (WH-711) is found at $1 \times 10^{-3}$ M to $1 \times 10^{-6}$ M IAA treatment.

**Seedling growth**

- All the doses of IAA show the increase in seedling growth of *Triticum aestivum* PBW-502.
- $1 \times 10^{-1}$ M to $1 \times 10^{-7}$ M doses of IAA show an stimulation effect. While the lower concentration $1 \times 10^{-8}$ M and $1 \times 10^{-10}$ M show an inhibition in seedling
growth of *Hordeum vulgare* cv. BH-393. While, in cv. K-508, all the dose of IAA show the increment except $1 \times 10^{-10}$M dose.

- In *Pisum sativum* cv. AP-3, $1 \times 10^{-3}$M dose to $1 \times 10^{-7}$M of IAA have a decline while $1 \times 10^{-8}$M to $1 \times 10^{-10}$ M dose shows the increment in seedling growth. While in cv. Aparana, all the dose indicate the inhibitory response but the dose $1 \times 10^{-7}$M show a little increment in seedling growth.

- All the dose except $1 \times 10^{-8}$M inhibits seedling growth of in *Cicer arietinum* cv. C-235. $1 \times 10^{-7}$M to $1 \times 10^{-10}$M make increment in seedling growth of cv. Surya.

- The dose $1 \times 10^{-4}$M stimulate and $1 \times 10^{-7}$M dose inhibit the seedling growth in *Brassica compestris* cv. Pusa bold. While, there is a variable effect of IAA treatments in cultivar PT-303.

- The higher dose $1 \times 10^{-3}$M of IAA show the inhibitory effect and the lower dose ($1 \times 10^{-10}$M) show the increment in fresh weight and dry weight of epicotyl and hypocotyl of *Phaseolous aureus* cv. K-851.

Doses of IAA are selected for further studies to analyze seedling growth response at 4th, 6th and 8th days of radicle emergence.

- $1 \times 10^{-8}$M dose of IAA cause promotion in seedling growth of *Cicer arietinum* cv. C-235 and Surya and *Pisum sativum* cv. AP-3. It becomes more pronounced at 8th day when growth proceed from 4th to 8th day. The seedling growth of *Pisum sativum* cv. Aparana is also stimulated by $1 \times 10^{-7}$M dose.

- The dose $1 \times 10^{-6}$M IAA cause promotion in seedling growth of *Brassica compestris* cv. PT-303 and *Triticum aestivum* cv. WH-711. When the age increase 4th to 8th day, this response is more clear. While, in *Triticum aestivum* cv. PBW-502 this response is visible at the dose $1 \times 10^{-5}$M.
The dose $1 \times 10^{-2}$M and $1 \times 10^{-3}$M of IAA show the increment response in seedling growth of *Hordeum vulgare* cv. BH-393 and cv. K-508 respectively and it become pronounced at 8\(^{th}\) day.

Dose $1 \times 10^{-10}$ M show the increment effect in seedling growth of *Phaseolus aureus* cv. K-851, being maximum at 8\(^{th}\) day.

$1 \times 10^{-9}$M dose of IAA inhibit seedling growth of *Triticum aestivum* cv. PBW-502 and WH-711 being maximum at 8\(^{th}\) day.

In *Pisum sativum* cv. AP-3 and Aparana, the dose $1 \times 10^{-5}$M cause inhibitory effect on seedling growth as visible on 4\(^{th}\) to 8\(^{th}\) day.

$1 \times 10^{-3}$M dose of IAA inhibit seedling growth of *Cicer arietinum* cv. C-235 and Surya and *Phaseolus aureus* cv. K-851, inhibitory response is clear, as age move from 4\(^{th}\) to 8\(^{th}\) day.

$1 \times 10^{-8}$M and $1 \times 10^{-10}$M dose of IAA inhibit the seedling growth of *H. vulgare* cv. BH-393 and K-508 respectively, as the age proceed from 4\(^{th}\) to 8\(^{th}\) day.

Increment in fresh weight and dry weight of coleoptile and radicle is visible at dose of IAA ($1 \times 10^{-9}$M) in *Triticum aestivum* cv. PBW-502.

An increase in fresh weight of coleoptile and radicle of *Cicer arietinum* cv. Surya are observed at $1 \times 10^{-3}$M dose of IAA treatment along with age.

When seeds are treated with different concentrations of cytokinin i.e. $1 \times 10^{-1}$M to $1 \times 10^{-10}$M, thereafter, kept in dark for seed germination and seedling growth, the observations are:

**Seed germination**

The higher dose ($1 \times 10^{-1}$M) of cytokinin cause retardation of the seed germination and seedling growth of *P. sativum* cv. AP-3 and Aparana, *Brassica compestris* cv. Pusabold and PT-303. While in
Cicer arietinum cv. C-235 and Phaseolus aureus cv. K-851, being maximum at the dose 1x10⁻¹M and 1x10⁻²M.

**Seedling growth**

- The doses i.e. 1x10⁻⁹M and 1x10⁻¹⁰M and doses (1x10⁻¹, 1x10⁻²M and 1x10⁻³M) of cytokinin show the little increment in fresh weight and dry weight of coleoptile in Triticum aestivum cv.PBW-502. While, it is reverse in case of radicle.

- All the doses of cytokinin show the inhibitory effect in seedling growth while the dose 1x10⁻⁹M show an increment in seedling growth of Triticum aestivum cv. WH-711.

- All the doses of cytokinin show the increment in seedling growth of Hordeum vulgare cv. BH-393. While, inhibition at all the doses of cytokinin in H. vulgare cv. K-508.

- Seedling growth of Pisum sativum cv. AP-3 show an increment effect in all the doses of cytokinin except 1x10⁻⁷M.

- Seedling growth of Pisum sativum cv. Aparana indicate the increment at 10⁻¹⁰M to 1x10⁻⁵M of cytokinin while the 1x10⁻³M and 1x10⁻⁴M show inhibition.

- The doses 1x10⁻³M to 1x10⁻⁸M of cytokinin cause inhibition and the higher dose (10⁻⁹M and 1x10⁻¹⁰M) show stimulation in seedling growth of Cicer arietinum cv. C-235.

- All doses of cytokinin except 1x10⁻⁵M inhibit seedling growth of Cicer arietinum cv. Surya.

- 1x10⁻¹M and 1x10⁻⁴M cytokinin doses stimulate the seedling growth of Brassica compestris cv. Pusa bold and PT-303, and 1x10⁻⁸M to 1x10⁻¹⁰M doses inhibits.

- All dose of cytokinin inhibit the seedling growth of P. aureus. While, dose 1x10⁻¹⁰M cause stimulation.
Doses of cytokinin are selected for further studies to analyze seedling growth response at 4th, 6th and 8th days of radicle emergence.

- 1x10⁻⁸ M dose of cytokinin stimulate the seedling growth of Triticum aestivum cv. WH-711, Hordeum vulgare cv. BH-393, Pisum sativum cv. Aparana, it become more clear at 8th day.
- When the age increase 4th to 8th day, the stimulated seedling growth of Triticum aestivum cv. PBW-502 and Cicer arietinum cv. C-235 is observed at dose 1x10⁻⁹ M of cytokinin.
- 1x10⁻² M dose of cytokinin cause increase in seedling growth of Pisum sativum cv. AP-3 while 1x10⁻⁷ M cause inhibition.
- The dose 1x10⁻¹ M increase the seedling growth of Hordeum vulgare cv. K-508 and 1x10⁻³ M inhibits the seedling growth. As age increases 4th to 8th days.
- 1x10⁻¹⁰ M dose of cytokinin cause promotion in seedling growth of Phaseolus aureus cv. K-851. Being pronounced at 8th day.
- 1x10⁻⁸ M dose of cytokinin inhibit in seedling growth of Cicer arietinum cv. C-235, Brassica compestris Pusa bold and P. aureus cv. K-851 as age 4th to 8th day.
- In Triticum aestivum cv. PBW-502 and Cicer arietinum cv. Surya, the dose 1x10⁻⁶ M cause inhibition in seedling growth.
- 1x10⁻³ M dose of cytokinin cause inhibition in seedling growth of Pisum sativum cv. Aparana and Hordeum vulgare cv. K-508. It become more clear as age increase.
- 1x10⁻² M dose of cytokinin inhibits the seedling growth of Triticum aestivum cv. WH-711 and similar, response of seedling growth of Hordeum vulgare cv. BH-393 is visible at treatment of 1x10⁻⁴ M.
When seeds of plants are treated with different concentrations of GA i.e. $1 \times 10^{-1}$M to $1 \times 10^{-10}$M, thereafter, kept in dark for seed germination and seedling growth. The observations reveals:

**Seed germination**

- Seed germination of *Triticum aestivum* cv. PBW-502 and WH-711 is not affected by GA.

**Seedling growth**

- $1 \times 10^{-1}$ M to $1 \times 10^{-6}$M doses of GA stimulate the seedling growth i.e. being maximum at $1 \times 10^{-1}$M dose of GA while $1 \times 10^{-9}$M of GA inhibit the seedling growth of *Triticum aestivum* cv. PBW-502.
- Inhibited seedling growth of *Triticum aestivum* cv. WH-711 is noticed at the treatment $1 \times 10^{-9}$M of GA.
- The doses ($1 \times 10^{-5}$M to $1 \times 10^{-9}$M) of GA cause promotory effect. While $1 \times 10^{-5}$M shows inhibitory response in *H. vulgare* cv. BH-393.
- A variable response is visible in seedling growth of *H. vulgare* cv. K-508 i.e. maximum inhibition at $1 \times 10^{-6}$M and promotion at $1 \times 10^{-9}$M.
- Stimulation of seedling growth of *P. sativum* cv. AP-3 is found with treatment of GA, being maximum at $1 \times 10^{-4}$M. But response of cv. Aparana is different, i.e. inhibition at $1 \times 10^{-5}$M and promotion at $1 \times 10^{-9}$M.
- Inhibited seedling growth of *C. arietinum* cv. C-235 is observed at dose of GA. i.e. $1 \times 10^{-3} \text{M}$ and $1 \times 10^{-9} \text{M}$ while dose $1 \times 10^{-7} \text{M}$ cause stimulation.

- Variable response of seedling growth of *Cicer arietinum* cv. Surya is found when treated with different doses of GA i.e. inhibition at $1 \times 10^{-9} \text{M}$ and promotion at $1 \times 10^{-4} \text{M}$.

- Higher doses ($1 \times 10^{-2} \text{M}$ and $1 \times 10^{-3} \text{M}$) show the stimulation in seedling growth of *B. compestris* cv. Pusa bold.

- The dose $1 \times 10^{-8} \text{M}$ show the promotory effect on seedling growth of *Brassica compestris* cv. PT-303. And dose $1 \times 10^{-5}$ show the reduction.

- The lower dose of GA i.e. $1 \times 10^{-10}$ M cause stimulation and dose $1 \times 10^{-5}$ M express inhibition of seedling growth of *Phaseolus aureus* cv. K-851.

Doses of GA are selected for further studies to analyze seedling growth response at 4th, 6th and 8th days of radicle emergence.

- $1 \times 10^{-9} \text{M}$ dose of GA cause inhibition in seedling growth of *Triticum aestivum* cv. PBW-502 and WH-711 and *Cicer arietinum* cv. C-235 and Surya. being more pronounced at 8th day.

- $1 \times 10^{-5}$ M dose of GA cause inhibition in seedling growth of *Brassica compestris* cv. PT-303 and *Phaseolus aureus* cv. K-851. It is more clear when the age increase proceed from 4th to 8th days.

- In *H. vulgare* cv. BH-393, dose $1 \times 10^{-5}$M show the promotory response and dose $1 \times 10^{-2}$M show the inhibitory response in seedling growth. When growth proceed from 4th to 8th day, this response become more clear.

- While, in *H. vulgare* cv. K-508, $1 \times 10^{-6}$M dose show the inhibitory response that is clear when the age increase 4th to 8th day.
1x10^{-3}M dose of GA cause stimulation in length of plumule of *P. sativum* cv. Aparana.

1x10^{-8}M dose of GA cause promotion in seedling growth of *H. vulgare* cv. K-508 and *Brassica compestris* PT-303. It become more pronounced at 8th day.

1x10^{-7}M dose of GA cause promotion in seedling growth of *Triticum aestivum* cv. WH-711 and *Cicer arietinum* cv. C-235. Being more clear at 8th day.

1x10^{-4}M dose of GA cause promotion in seedling growth of *Pisum sativum* cv. AP-3 and *Cicer arietinum* cv. Surya. Being more pronounced at 8th day.

Seedling growth of *Brassica compestris* cv. Pusabold is enhanced by dose 1x10^{-3}M and show inhibition at 1x10^{-7}M dose of GA.

Similarly 1x10^{-9}M dose of GA cause stimulation in seedling growth of *P. sativum* cv. Aparana but this is inhibited at 1x10^{-3}M.

A promotory response in seedling growth of *P. aureus* cv. K-851 at the treatment of 1x10-10M while, dose 1x10^{-5}M show the inhibitory response, being more pronounced at 8th day.

Effect of inhibitory dose of NaCl and promotory dose of growth hormone (IAA, GA and cytokinin) on seedling growth of plants are observed and data are compared with inhibitory dose response of NaCl. and key observations are:

- The promotory response in seedling growth is noticed in all the plants when seed treated with NaCl and the growth hormones (IAA, GA, Cytokinin), being maximum at combined growth hormone treatment (NaCl+IAA +GA+ cytokinin).
Stimulating seedling growth of *Triticum aestivum* cv. PBW-502 is found when 1x10^{-1}M NaCl stressed seeds treated with 1x10^{-5}M of IAA+ 1x10^{-1}M of GA + 1x10^{-9}M of cytokinin.

When 1x10^{-1}M NaCl stressed seeds of *Triticum aestivum* cv. WH-711 treated with 1x10^{-6}M of IAA+ 1x10^{-7}M of GA + 1x10^{-8}M of cytokinin, then it is show the maximum increase in seedling growth.

Seedling growth of *H. vulgare* cv. BH-393 also stimulated when 1x10^{-4}M NaCl stressed seeds treated with 1x10^{-2}M of IAA+1x10^{-5}M of GA+1x10^{-8}M of cytokinin.

The seedling growth of *H. vulgare* cv. K-508 is enhanced when 1x10^{-1}M NaCl stressed seeds treated with 1x10^{-3}M of IAA+1x10^{-8}M of GA+1x10^{-1}M of cytokinin.

When 1x10^{-1}M NaCl stressed seeds of *Pisum sativum* cv. AP-3 treated with 1x10^{-8}M of IAA+ 1x10^{-4}M of GA+1x10^{-2}M of cytokinin, then it is show the maximum enhancement of seedling growth.

When 1x10^{-2}M NaCl stressed seeds of *Pisum sativum* cv. Aparana treated with 1x10^{-7}M of IAA+ 1x10^{-9}M of GA +1x10^{-8}M of cytokinin, the seedling growth show a maximum increase.

The maximum increase in seedling growth of *Cicer arietinum* cv. C-235 is observed when 1x10^{-9}M NaCl stressed seeds treated with 1x10^{-6}M of IAA+ 1x10^{-7}M of GA + 1x10^{-9}M of cytokinin.

The maximum increase in seedling growth of *Cicer arietinum* cv. Surya is found when 1x10^{-9}M NaCl stressed seeds treated with 1x10^{-8}M of IAA+ 1x10^{-4}M of GA + 1x10^{-5}M of cytokinin.

When 1x10^{-6}M NaCl stressed seeds of *Brassica compestris* cv. Pusa bold treated with 1x10^{-4}M of IAA+ 1x10^{-3}M of GA + 1x10^{-3}M of cytokinin, then it show the maximum enhancement in seedling growth.
Seedling growth of *Brassica compestris* cv. PT-303 is enhanced when $1 \times 10^{-3}$M NaCl stressed seeds treated with $1 \times 10^{-6}$M of IAA + $1 \times 10^{-8}$M of GA + $1 \times 10^{-4}$M of cytokinin.

The maximum increased in seedling growth of *Phaseolus aureus* cv. K-851 is found when $1 \times 10^{-1}$M NaCl stressed seeds treated with $1 \times 10^{-6}$M of IAA + GA + cytokinin.

However, response (inhibition/promotion) of seedling growth is dose, cultivar and organ specific.

The level of biochemical compounds (total sugar, reducing sugar, total protein and nitrogen) are measured in imbibed seed of plants, after treatment of different doses of NaCl and results indicates:

- The total protein content, total sugar, reducing sugar and total nitrogen are increase in imbibed seeds of *Triticum aestivum* cv. PBW-502 at the dose $1 \times 10^{-10}$M dose of NaCl while, they show a decline at the dose of $1 \times 10^{-1}$M of NaCl. Similar changes are found in imbibed seed of *Triticum aestivum* cv. WH-711, at the treatment of $1 \times 10^{-1}$M dose of NaCl.

- Total protein content in imbibed seeds of *Hordeum vulgare* cv. BH-393, increase in both dose i.e. $1 \times 10^{-8}$M and $1 \times 10^{-4}$M dose of NaCl. While, total sugar, reducing sugar and total nitrogen is also higher in amount at the dose of $1 \times 10^{-8}$M of NaCl and it become low at $1 \times 10^{-4}$M.

- The total protein content, total sugar, reducing sugar and total nitrogen in imbibed seeds of *H. vulgare* cv. K-508 show an increase at the dose $1 \times 10^{-4}$M of NaCl.

- Total sugar, reducing sugar, total protein content and total nitrogen in imbibed seeds of *Pisum sativum* cv. AP-3 and cv. Aparana, is also higher at the dose $1 \times 10^{-9}$M of NaCl. While, all
these components decrease at the dose $1 \times 10^{-1}$M and $1 \times 10^{-2}$M of NaCl respectively.

- The total protein content, total sugar, reducing sugar and total nitrogen show an increase in imbibed seeds of *Cicer arietinum* cv. C-235 at the dose $1 \times 10^{-3}$M dose of NaCl while a decrease is visible at the dose of $1 \times 10^{-9}$M of NaCl.

- An increase of total protein content, total nitrogen, reducing sugar and total sugar in imbibed seeds of *Cicer arietinum* cv. Surya is found at treatment of $1 \times 10^{-5}$M dose of NaCl. While, $1 \times 10^{-9}$M dose of NaCl cause a decline.

- The level of biochemical component i.e. total protein content, total sugar, total nitrogen and reducing sugar show an increase at the dose of $1 \times 10^{-7}$M dose of NaCl and decrease at the dose $1 \times 10^{-3}$M NaCl in seeds of *Brassica compestris* cv. PT-303.

- An increase in biochemical components e.g. total protein content, total sugar, total nitrogen and reducing sugar is found in seed of *B. compestris* cv. Pusabold when treated with dose $1 \times 10^{-2}$M dose and a decrease at $1 \times 10^{-6}$M dose of NaCl.

- In imbibed seeds of *Phaseolus aureus* cv.K-851, Treatment of $1 \times 10^{-7}$M dose of NaCl cause an increase in the level of total protein content, total nitrogen, reducing sugar and total sugar. While at the treatment of $1 \times 10^{-1}$M dose of NaCl show a change in decline.

The level of biochemical components (total sugar, reducing sugar, total protein and nitrogen) are measured in treated seed with different doses of IAA. The key observations are:

- The level of biochemical components i.e. total sugar, reducing sugar, total protein and total nitrogen show an increase in
imbibed seed of *Triticum aestivum* cv. PBW-502, WH-711, *Hordeum vulgare* cv. BH-393, K-508, *Brassica compestris* cv. Pusa bold, PT-303 and *Phaseolus aureus* cv. K-851 treated with doses $1 \times 10^{-5} \text{M}, 1 \times 10^{-6} \text{M}, 1 \times 10^{-7} \text{M}, 1 \times 10^{-8} \text{M}, 1 \times 10^{-9} \text{M}$ and $1 \times 10^{-10} \text{M}$ IAA respectively and there is a decline in all content in seeds as treated with doses $1 \times 10^{-9} \text{M}, 1 \times 10^{-8} \text{M}, 1 \times 10^{-7} \text{M}, 1 \times 10^{-6} \text{M}, 1 \times 10^{-5} \text{M}, 1 \times 10^{-4} \text{M}$ and $1 \times 10^{-3} \text{M}$ of IAA respectively.

- In imbibed seed of *Cicer arietinum* cv. C-235 and Surya, treatment of $1 \times 10^{-8} \text{M}$ dose of IAA cause an increase the level of biochemical components i.e. total sugar, reducing sugar, total protein and total nitrogen. While a decline observed at the dose $1 \times 10^{-3} \text{M}$ of IAA.

- Total sugar, reducing sugar, total protein and total nitrogen in imbibed seeds of *Pisum sativum* cv AP-3 and Aparana exhibits increase at the dose $1 \times 10^{-8} \text{M}$ and $1 \times 10^{-7} \text{M}$ respectively. While decrease at the dose $1 \times 10^{-5} \text{M}$ of IAA.

The level of biochemical components i.e. (total sugar, reducing sugar, total protein and nitrogen are measured in imbibed seed of plants, after treatment of different doses of cytokinin. The key observations are:

- The level of biochemical components e.g. total sugar, reducing sugar, total protein and total nitrogen show an increase in imbibed seed of *Triticum aestivum* cv. PBW-502, WH-711, *Hordeum vulgare* cv. BH-393, *Pisum sativum* cv. AP-3, Aparana, *Cicer arietinum* cv. C-235, Surya, *Brassica compestris* cv. Pusa bold, PT-303 and *Phaseolus aureus* cv. K-851 treated with doses $1 \times 10^{-9} \text{M}, 1 \times 10^{-8} \text{M}, 1 \times 10^{-7} \text{M}, 1 \times 10^{-6} \text{M}, 1 \times 10^{-5} \text{M}, 1 \times 10^{-4} \text{M}$ and $1 \times 10^{-3} \text{M}$ of cytokinin respectively and there is a decline in content in seeds as treated with doses...
The level of biochemical components i.e. (total sugar, reducing sugar, total protein and nitrogen are measured in imbibed seed of plants, after treatment of different doses of GA. The key observations are:

- The level of biochemical components i.e. total sugar, reducing sugar, total protein and total nitrogen show an increase in imbibed seed of *Triticum aestivum* cv. PBW-502, WH-711, *Hordeum vulgare* cv. BH-393, *Pisum sativum* cv. Aparana, *Cicer arietinum* cv. C-235, Surya, *Brassica compestris* cv. Pusa bold, PT-303 and *Phaseolus aureus* cv. K-851 treated with doses $1 \times 10^{-1}$ M, $1 \times 10^{-7}$ M, $1 \times 10^{-8}$ M, $1 \times 10^{-9}$ M, $1 \times 10^{-10}$ M of GA respectively and there is a decline in content in seeds as treated with doses $1 \times 10^{-9}$ M, $1 \times 10^{-9}$ M, $1 \times 10^{-2}$ M, $1 \times 10^{-6}$ M, $1 \times 10^{-3}$ M, $1 \times 10^{-9}$ M, $1 \times 10^{-7}$ M, $1 \times 10^{-5}$ M and $1 \times 10^{-5}$ M of GA respectively.

- Total sugar, reducing sugar, total protein and total nitrogen, in imbibed seeds of *Pisum sativum* cv AP-3 exhibits an increase at the dose $1 \times 10^{-4}$ M IAA.

Interactive effect of inhibitory dose of NaCl and promotory dose of growth hormone (IAA, GA and cytokinin) on the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of plants are observed and data are compared with inhibitory dose of NaCl. And key observations are:

- The level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) is raised in seeds treated with NaCl + the growth hormones (IAA, GA, Cytokinin) and
being maximum at combined growth hormone treatment (NaCl+IAA +GA+ cytokinin).

- The less increase in the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) is observed in seeds of plants at treatment of IAA + NaCl except *Pisum sativum* cv.Aparana and *P. aureus* cv. K-851.

- In *P. sativum* cv. Aparana, the mimimun increment in the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) is noticed when seed treated with NaCl+GA. While in *P. aureus* the least increase observed at the treatment of NaCl+Kn.

- Increased level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of *Triticum aestivum* cv. PBW-502 is found when 1x10^{-5}M NaCl stressed seeds treated with 1x10^{-5}M of IAA+ 1x10^{-1} M of GA + 1x10^{-9}M of cytokinin.

- When 1x10^{-1}M NaCl stressed seeds of *Triticum aestivum* cv. WH-711 treated with 1x10^{-6}M of IAA+ 1x10^{-7}M of GA + 1x10^{-8}M of cytokinin, it show the maximum increase in the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen).

- The level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of *H. vulgare* cv. BH-393 is also stimulated when 1x10^{-6}M NaCl stressed seeds treated with 1x10^{-2}M of IAA+1x10^{-5}M of GA+1x10^{-8}M of cytokinin.

- The level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of *H. vulgare* cv. K-508 is enhanced when 1x10^{-1}M NaCl stressed seeds treated with 1x10^{-5}M of IAA+1x10^{-9}M of GA+1x10^{-1}M of cytokinin.
When 1x10^{-1}M NaCl stressed seeds of *Pisum sativum* cv. AP-3 treated with 1x10^{-8}M of IAA+ 1x10^{-4}M of GA+1x10^{-2}M of cytokinin, then it show the maximum enhancement in the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen).

When 1x10^{-2}M NaCl stressed seeds of *Pisum sativum* cv. Aparana treated with 1x10^{-7}M of IAA+ 1x10^{-9}M of GA +1x10^{-8}M of cytokinin, the level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) show a maximum increase.

The maximum increase in level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of *Cicer arietinum* cv. C-235 is observed when 1x10^{-9}M NaCl stressed seeds treated with 1x10^{-8}M of IAA+ 1x10^{-7}M of GA + 1x10^{-9}M of cytokinin.

The maximum increase in level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen) of *Cicer arietinum* cv. Surya is found when 1x10^{-9}M NaCl stressed seeds treated with 1x10^{-8}M of IAA+ 1x10^{-4}M of GA + 1x10^{-5}M of cytokinin.

When 1x10^{-6}M NaCl stressed seeds of *Brassica compestris* cv. Pusa bold treated with 1x10^{-4}M of IAA+ 1x10^{-3}M of GA + 1x10^{-3}M of cytokinin, then it show the maximum enhancement in level of biochemical components (total sugar, reducing sugar, total protein content and total nitrogen).

The level of biochemical component (total sugar, reducing sugar, total protein content and total nitrogen) of *Brassica compestris* cv. PT-303 is enhanced when 1x10^{-3}M NaCl stressed seeds
treated with $1 \times 10^{-6}$M of IAA+ $1 \times 10^{-8}$M of GA + $1 \times 10^{-4}$M of cytokinin.

- The maximum increased level of biochemical component (total sugar, reducing sugar, total protein content and total nitrogen) of *Phaseolus aureus* cv. K-851 is found when $1 \times 10^{-1}$M NaCl stressed seeds treated with $1 \times 10^{-10}$M of IAA+ GA + cytokinin.

Total activities of enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase are measured in treated seeds of plants with NaCl doses. The key observations are:

- In imbibed seed of *Triticum aestivum* cv. PBW-502, α – amylase and β – amylase activity increase at the treatment of $1 \times 10^{-1}$M dose of NaCl and the activity of Protease, acid phosphatase and alkaline phosphatase become decrease. While the activity of α-amylase and β- amylase inhibits at the dose $1 \times 10^{-10}$M and the activity of Protease, acid phosphatase and alkaline phosphatase increase at this dose.

- simmilarly, the activity of α- amylase and β- amylase increase at the treatment $1 \times 10^{-1}$M and the activity of Protease, acid phosphatase and alkaline phosphatase decrease in seeds of *Triticum aestivum* cv. WH-711. While, at the treatment $1 \times 10^{-9}$M, the activity of α- amylase and β- amylase decrease and the activity of Protease, acid phosphatase and alkaline phosphatase increase.

- In *H. vulgare* cv. BH-393, the activity of α-amylase and β-amylase become increase at the treatment of $1 \times 10^{-4}$M dose of NaCl and the activity of Protease, acid phosphatase and alkaline phosphatase decrease. While at the treatment of $1 \times 10^{-8}$M the
activity of α- amylase and β- amylase decrease and the activity of Protease , acid phosphatase and alkaline phosphatase increase.

- The activity of α- amylase and β- amylase decrease at the treatment of $1 \times 10^{-1}$M dose of NaCl and the activity of Protease , acid phosphatase and alkaline phosphatase increase in *Hordeum vulgare* cv. K-508.

- The activity of α-amylase, Protease, acid phosphatase and alkaline phosphatase become decrease at the dose of $1 \times 10^{-1}$M of NaCl but the activity of β- amylase increase. While the activities of α-amylase, Protease, acid phosphatase and alkaline phosphatase increase and β- amylase activity decrease at the treatment of $1 \times 10^{-9}$M dose of NaCl in *Pisum sativum* cv, AP-3.

- In imbibed seed of *Pisum sativum* cv. PBW-502, α - amylase and β - amylase activity increase at the treatment of $1 \times 10^{-2}$M dose of NaCl and the activity of Protease , acid phosphatase and alkaline phosphatase decrease. While the activity of α- amylase and β- amylase inhibits at the dose $1 \times 10^{-9}$M and the activity of Protease , acid phosphatase and alkaline phosphatase show increase.

- The activity of α- amylase , β- amylase and protease increase at the treatment of $1 \times 10^{-9}$M NaCl and the activity of acid and alkaline phosphatase decrease in seeds of *Cicer arietinum* cv. C-235. While at the treatment of $1 \times 10^{-3}$M of NaCl, the activity of α- amylase , β- amylase and protease decrease and acid and alkaline phosphatase increase.

- Similarly in *Cicer arietinum* cv. Surya, the activity of α- amylase ,β- amylase and protease increase at the treatment of $1 \times 10^{-9}$M dose of NaCl and the activity of acid and alkaline phosphatase decrease, At the treatment of $1 \times 10^{-5}$M NaCl , the activity of α- amylase ,β-
amylase and protease decrease and acid and alkaline phosphatase increases.

The activity of α- amylase , β- amylase and protease become increase at the treatment of $1 \times 10^{-3}$M NaCl and the activity of acid and alkaline phosphatase decrease in seeds of *Brassica compestris* cv. PT-303. While, at the treatment of $1 \times 10^{-7}$M of NaCl, the activity of α- amylase , β- amylase and protease decrease and acid and alkaline phosphatase increase.

There is no effect is observed in activity of protease at the dose $1 \times 10^{-6}$M of NaCl in *Brassica compestris* cv. Pusa bold. While, the activity of acid and alkaline phosphatase decrease and α and β amylase activity become increase. At the dose of $1 \times 10^{-5}$M NaCl , the activity of α-amylase and β- amylase and protease decrease and acid , alkaline phosphatase increase.

The activity of α- amylase , β- amylase and protease show increase at the treatment of $1 \times 10^{-3}$M NaCl and the activity of acid and alkaline phosphatase decrease in *P. aureus* cv. K-851. While at the treatment of $1 \times 10^{-7}$M of NaCl, the activity of α- amylase , β- amylase and protease decrease and acid and alkaline phosphatase exhibits increase.

In selected doses of IAA, the total activities of some enzymes e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase are measured in imbibed seeds of some plants. The observations are:

Activities of all the enzymes in imbibed seeds of *Triticum aestivum* cv. PBW-502 (e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-9}$M dose of IAA. While increase at the dose $1 \times 10^{-5}$M of IAA.
All the enzymes e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-9}$M of IAA and increase at the $1 \times 10^{-6}$M IAA in *Triticum aestivum* cv. WH-711.

The activity of α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase increase at the treatment $1 \times 10^{-8}$ M of IAA and decrease at $1 \times 10^{-2}$M of IAA in *Hordeum vulgare* cv. BH-393.

In *Hordeum vulgare* cv. K-508, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-10}$M and increase at the treatment of $1 \times 10^{-3}$M of IAA.

Activities of all the enzymes in imbibed seeds of *Pisum sativum* cv. AP-3 (e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-5}$M dose of IAA. While increase at the dose $1 \times 10^{-8}$M of IAA.

All the enzymes e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-5}$M of IAA and increase at the $1 \times 10^{-7}$M IAA in *Pisum sativum* cv. Aparana.

In *Cicer arietinum* cv. C-235, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-3}$M and increase at the treatment of $1 \times 10^{-8}$M of IAA.

The activities of all the enzymes in imbibed seeds of *Cicer arietinum* cv. Surya (e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-3}$M dose of IAA. While increase at the dose $1 \times 10^{-8}$M of IAA.

Activities of all the enzymes in imbibed seeds of *Brassica compestris* cv. PT-303 (e.g. α-amylase, β- amylase, protease, acid
phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-2}$M dose of IAA. While increase at the dose $1 \times 10^{-6}$M of IAA.

- All the enzymes e.g. $\alpha$- amylase, $\beta$- amylase, protease, acid phosphatase and alkaline phosphatase show the decreased activity at the treatment of $1 \times 10^{-7}$M of IAA and increase at the $1 \times 10^{-4}$M IAA in *Triticum aestivum* cv. WH-711.

- In *Phaseolus aureus* cv. K-851, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-3}$M and increase at the treatment of $1 \times 10^{-10}$M of IAA.

In selected doses of cytokinin, the total activities of some enzymes e.g. $\alpha$- amylase, $\beta$- amylase, protease, acid phosphatase and alkaline phosphatase are analyzed in imbibed seeds of some plants. The key observations are:

- Activities of all the enzymes in imbibed seeds of *Triticum aestivum* cv. PBW-502 (e.g. $\alpha$- amylase, $\beta$- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-6}$M dose of Kn. While increase at the dose $1 \times 10^{-9}$M of Kn.

- All the enzymes e.g. $\alpha$- amylase, $\beta$- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-2}$M of Kn and increase at the $1 \times 10^{-8}$M Kn in *Triticum aestivum* cv. WH-711.

- The activity of $\alpha$- amylase, $\beta$- amylase, protease, acid phosphatase and alkaline phosphatase increase at the treatment $1 \times 10^{-8}$ M of Kn and decrease at $1 \times 10^{-4}$M of Kn in *Hordeum vulgare* cv. BH-393.

- In *Hordeum vulgare* cv. K-508, the activities of all the enzymes become decrease at the treatment of $1 \times 10^{-3}$M and increase at the treatment of $1 \times 10^{-1}$M of Kn.

- Activities of all the enzymes in imbibed seeds of *Pisum sativum* cv. AP-3 i.e. $\alpha$-amylase, $\beta$- amylase, protease, acid phosphatase and
alkaline phosphatase decrease at the treatment of $1 \times 10^{-7}$ M dose of Kn. While increase at the dose $1 \times 10^{-2}$ M of Kn.

- All the enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-3}$ M of Kn and increase at the $1 \times 10^{-8}$ M Kn in *Pisum sativum* cv. Aparana.

- In *Cicer arietinum* cv. C-235, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-8}$ M and increase at the treatment of $1 \times 10^{-9}$ M of Kn.

- The activities of all the enzymes in imbibed seeds of *Cicer arietinum* cv. Surya (e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-6}$ M dose of Kn. While increase at the dose $1 \times 10^{-5}$ M of Kn.

- Activities of all the enzymes in imbibed seeds of *Brassica compestris* cv. PT-303 (e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-5}$ M dose of Kn. While increase at the dose $1 \times 10^{-4}$ M of Kn.

- All the enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decreased activity at the treatment of $1 \times 10^{-8}$ M of Kn and increase at the $1 \times 10^{-3}$ M Kn in *Brassica compestris* cv. Pusa bold.

- In *Phaseolus aureus* cv. K-851, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-9}$ M and increase at the treatment of $1 \times 10^{-10}$ M of Kn.

In selected doses of GA, the total activities of some enzymes e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase are analyzed in imbibed seeds of some plants. The key observations are:
Activities of all the enzymes in imbibed seeds of *Triticum aestivum* cv. PBW-502 (e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of $1 \times 10^{-9}$M dose of GA. While increase at the dose $1 \times 10^{-4}$M of GA.

All the enzymes e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-5}$M of GA and increase at the $1 \times 10^{-7}$M GA in *Triticum aestivum* cv. WH-711.

The activity of α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase increase at the treatment $1 \times 10^{-5}$ M of GA and decrease at $1 \times 10^{-2}$M of GA in *Hordeum vulgare* cv. BH-393.

In *Hordeum vulgare* cv. K-508, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-6}$M and increase at the treatment of $1 \times 10^{-8}$M of GA.

Activities of all the enzymes (e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) show increase at the treatment of $1 \times 10^{-4}$M dose of GA in imbibed seeds of *Pisum sativum* cv. AP-3.

All the enzymes e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decrease activity at the treatment of $1 \times 10^{-3}$M of GA and increase at the $1 \times 10^{-9}$M GA in *Pisum sativum* cv. Aparana.

In *Cicer arietinum* cv. C-235, the activities of all the enzymes decrease at the treatment of $1 \times 10^{-9}$M and increase at the treatment of $1 \times 10^{-7}$M of GA.

The activities of all the enzymes (e.g. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) exhibit decrease at the treatment of $1 \times 10^{-9}$M dose of GA in imbibed seeds.
of *Cicer arietinum* cv. Surya. While increase at the dose 1x10^{-4}M of GA.

- Activities of all the enzymes (e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) decrease at the treatment of 1x10^{-5}M dose of GA in imbibed seeds of *Brassica compestris* cv. PT-303. While increase at the dose 1x10^{-8}M of GA.

- All the enzymes e.g. α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase show the decreased activity at the treatment of 1x10^{-7}M of GA and increase at the 1x10^{-3}M GA in *Brassica compestris* cv. Pusa bold.

- In *Phaseolus aureus* cv. K-851, the activities of all the enzymes decrease at the treatment of 1x10^{-5}M and increase at the treatment of 1x10^{-10}M of GA.

Interactive effect of inhibitory dose of NaCl + promotory dose of growth hormone (IAA, GA and cytokinin) on total activities of some enzymes (α-amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) in imbibed seeds of plants are studied and data are compared with inhibitory dose response of NaCl as compared a control, and key observations are:

- Enhanced activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is noticed in all the plants when seed treated with NaCl and the growth hormones (IAA, GA, Cytokinin) and being maximum at combined growth hormone treatment (NaCl+IAA +GA+ cytokinin).

- Increased activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) in seeds of *Triticum aestivum* cv. PBW-502 is found when 1x10^{-4}M NaCl stressed seeds treated with 1x10^{-5}M of IAA+ 1x10^{-1}M of GA + 1x10^{-9}M of cytokinin.
When $1 \times 10^{-1}$M NaCl stressed seeds of *Triticum aestivum* cv. WH-711 treated with $1 \times 10^{-6}$M of IAA + $1 \times 10^{-7}$M of GA + $1 \times 10^{-8}$M of cytokinin, then it is show the maximum enhancement in activities of some enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase.

Activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) in seeds of *H. vulgare* cv. BH-393 also stimulated when $1 \times 10^{-4}$M NaCl stressed seeds treated with $1 \times 10^{-2}$M of IAA + $1 \times 10^{-5}$M of GA + $1 \times 10^{-8}$M of cytokinin.

Activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) in seeds of *H. vulgare* cv. K-508 is enhanced when $1 \times 10^{-1}$M NaCl stressed seeds treated with $1 \times 10^{-3}$M of IAA + $1 \times 10^{-8}$M of GA + $1 \times 10^{-1}$M of cytokinin.

When $1 \times 10^{-1}$M NaCl stressed seeds of *Pisum sativum* cv. AP-3 treated with $1 \times 10^{-8}$M of IAA + $1 \times 10^{-4}$M of GA + $1 \times 10^{-2}$M of cytokinin, then it is show the maximum enhancement in activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase).

When $1 \times 10^{-2}$M NaCl stressed seeds of *Pisum sativum* cv. Aparana treated with $1 \times 10^{-7}$M of IAA + $1 \times 10^{-9}$M of GA + $1 \times 10^{-8}$M of cytokinin, the activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) show maximum increase.

The maximum increase in activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) of *Cicer arietinum* cv. C-235 is observed when $1 \times 10^{-9}$M NaCl stressed seeds treated with $1 \times 10^{-8}$M of IAA + $1 \times 10^{-7}$M of GA + $1 \times 10^{-9}$M of cytokinin.
The maximum increase in activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) in seeds of *Cicer arietinum* cv. Surya is found when 1x10^{-9}M NaCl stressed seeds treated with 1x10^{-8}M of IAA+ 1x10^{-4}M of GA + 1x10^{-5}M of cytokinin.

When 1x10^{-6}M NaCl stressed seeds of *Brassica compestris* cv. Pusa bold treated with 1x10^{-4}M of IAA+ 1x10^{-3}M of GA + 1x10^{-3}M of cytokinin, then it show the maximum enhancement in activities of some enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase).

The activities of enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is enhanced when 1x10^{-3}M NaCl stressed seeds of of *Brassica compestris* cv. PT-303 treated with 1x10^{-6}M of IAA+ 1x10^{-8}M of GA + 1x10^{-4}M of cytokinin.

The maximum increased activities of enzymes i.e. α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is found when 1x10^{-1}M NaCl stressed seeds of *Phaseolus aureus* cv. K-851 treated with 1x10^{-10}M of IAA+ GA + cytokinin.

The activities of enzymes i.e.α- amylase, β- amylase, protease and acid phosphatase ) show little increase in seeds of *Triticum aestivum* cv. PBW-502 , at the treatment of 1x10^{-1}M NaCl + 1x10^{-5}M IAA and minimum activity of alkaline phosphatase is also seen at the treatment of NaCl + Kn.

Activities of enzymes i.e. α- amylase, β- amylase) show little increase in seeds of *Triticum aestivum* cv. WH-711 treated with 1x10^{-3}M NaCl+ 1x10^{-7}M GA. The activities of protease, acid phosphatase and alkaline phosphatase is also increased at the treatment of 1x10^{-1}M NaCl +1x10^{-6}M IAA.
The activities of enzymes i.e. β- amylase, protease, acid phosphatase and alkaline phosphatase) exhibit an increase at the treatment of $1 \times 10^{-4} \text{M NaCl} + 1 \times 10^{-2} \text{M IAA}$. The activity of α- amylase is also increased at the treatment $1 \times 10^{-4} \text{M NaCl} + 1 \times 10^{-8} \text{M Kn}$ in *H. vulgare* cv. BH-393.

The increased activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is observed at the treatment of $1 \times 10^{-1} \text{M NaCl} + 1 \times 10^{-3} \text{M IAA}$ in *H. vulgare* cv. K-508.

Similarly, in *P. sativum* cv. AP-3, at the treatment of $1 \times 10^{-1} \text{M NaCl} + 1 \times 10^{-8} \text{M IAA}$, the activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is also enhanced.

The activities of α- amylase, β- amylase and alkaline phosphatase is increased at the treatment of $1 \times 10^{-2} \text{M NaCl} + 1 \times 10^{-7} \text{M IAA}$. The activities of acid phosphatase and protease is also increased at the treatment of $1 \times 10^{-2} \text{M NaCl} + 1 \times 10^{-9} \text{M GA}$ in *P. sativum* cv. Aparana.

The activities of α- amylase, protease, acid phosphatase and alkaline phosphatase is higher at the treatment of $1 \times 10^{-9} \text{M NaCl} + 1 \times 10^{-8} \text{M IAA}$. The activity of β- amylase is raised at the treatment of $1 \times 10^{-9} \text{M NaCl} + 1 \times 10^{-7} \text{M GA}$ in *C. arietinum* cv. C-235.

In *Cicer arietinum* cv. Surya, activities of enzymes (β- amylase, protease,acid phosphatase and alkaline phosphatase) show increase at the treatment of $1 \times 10^{-9} \text{M NaCl} + 1 \times 10^{-8} \text{M IAA}$. The activity of α- amylase is also increased at the treatment of $1 \times 10^{-9} \text{M NaCl} + 1 \times 10^{-5} \text{M Kn}$.

The activities of α- amylase, protease and acid phosphatase is higher at the treatment of $1 \times 10^{-3} \text{M NaCl} + 1 \times 10^{-6} \text{M IAA}$. The activity of β- amylase and alkaline phosphatase is also raised by the
treatment of $1 \times 10^{-3} \text{M} \, \text{NaCl} + 1 \times 10^{-4} \text{M} \, \text{Kn}$ in *Brassica compestris* cv. PT-303.

- In *Brassica compestris* cv. Pusa bold, activities of enzymes (α-amylase, β-amylase, protease and acid phosphatase) show stimulation at the treatment of $1 \times 10^{-6} \text{M} \, \text{NaCl} + 1 \times 10^{-4} \text{M} \, \text{IAA}$. The activity of alkaline phosphatase is higher at the treatment of $1 \times 10^{-6} \text{M} \, \text{NaCl} + 1 \times 10^{-3} \text{M} \, \text{GMA}$.

- In *P. aureus* cv. K-851, activities of enzymes (β-amylase, protease, acid phosphatase and alkaline phosphatase) is raised at the treatment of $1 \times 10^{-1} \text{M} \, \text{NaCl} + 1 \times 10^{-10} \text{M} \, \text{IAA}$. The activity of α-amylase show a little increase at the treatment of $1 \times 10^{-4} \text{M} \, \text{NaCl} + 1 \times 10^{-10} \text{M} \, \text{Kn}$.

In *vitro* activities of some enzymes e.g. α-amylase, β-amylase, protease, acid phosphatase and alkaline phosphatase are measured when enzyme extract of water imbibed seeds of *Phaseolus aureus* cv. K-851 treated with NaCl, IAA, GA and Kn. The key observations are:

- The inhibited enzyme activities are observed at the treatment of $1 \times 10^{-1} \text{M}$ of NaCl.
- The activities of α-amylase, β-amylase, acid phosphatase and alkaline phosphatase are enhanced at the dose $1 \times 10^{-10} \text{M}$ of GA.
- The activity of protease is also increased at the treatment of $1 \times 10^{-10} \text{M}$ IAA.

Interactive effect of inhibitory dose of NaCl and promotory dose of growth hormone (IAA, GA and cytokinin) on *in vitro* activities of some enzymes (α-amylase, β-amylase, protease, acid phosphatase and alkaline phosphatase) in enzyme extract of water imbibed seeds of *P. aureus* cv. K-851 are observed and data are compared with inhibitory dose response of NaCl and key observations are:
The maximum increased activities of enzymes (α- amylase, β- amylase, protease, acid phosphatase and alkaline phosphatase) is noted when enzyme extracts treated with $1 \times 10^{-1}$M NaCl and $1 \times 10^{-10}$M of IAA+ GA + cytokinin.

A little increase in activities of α- amylase, β- amylase, protease and alkaline phosphatase is observed when enzyme extract treated with $1 \times 10^{-10}$M IAA + $1 \times 10^{-1}$M NaCl. The activity of acid phosphatase also shows minimum increase at the treatment of $1 \times 10^{-1}$MNaCl + $1 \times 10^{-10}$M GA to extract.

When seeds of *Phaseolus aureus* cv. K-851 are grown in the MS medium. Callusing begin on 3rd day, shoot initiation at 14 days and after 18 -20 days multiple shoots are formed and plantlets are well developed and these plant leaves are used for the in vitro development of plant. Growth of callus in different treatments i.e. IAA, GA, Kn + NaCl is compared with treatment of NaCl alone and observations are as follows:

The leaf of *P. aureus* cv.K-851 are placed into the Murashige and Skoog medium treated with $1 \times 10^{-1}$M NaCl, inhibited callus formation, shoot growth and root growth are observed at treatment of NaCl. Callus formation initiation after 9 days of inoculation and callus is not well developed after 17th days.

The leaf of *Phaseolus aureus cv. K-851* is inoculated in the Murashige and Skoog medium treated with $1 \times 10^{-10}$M IAA and $1 \times 10^{-1}$M NaCl. It is observed that IAA reduces the inhibitory effect of NaCl in the growth medium. After 4 days of inoculation, the callus initiation occurs and after 4 days it show the chlorophyll development i.e. well developed green callus is formed. The root initiation is started after 3 days. Multiplication shoot formation is occurred after 5 days.
The leaf of *Phaseolus aureus* cv. K-851 is inoculated in the Murashige and Skoog medium treated with $1 \times 10^{-10}$M Kn and $1 \times 10^{-1}$M NaCl. The effect of cytokinin also decreases the inhibitory response of NaCl. Meristem proliferation and multiple shoot initiation are best in this medium after 4 days of inoculation, callus initiation occurs and after a week, it showed shoot formation. The root initiation occurs after 2 days of regeneration.

The leaf of *Phaseolus aureus* cv. K-851 is inoculated in the Murashige and Skoog medium treated with $1 \times 10^{-10}$M GA and $1 \times 10^{-1}$M NaCl. The colorless callus formation occurred after 3 day of inoculation and after 2 days chlorophyll development occurred in callus. After 3 days multiplication of shoot formation occurred. The root initiation occurred after 5 days of shoot initiation. It show that GA affect the negative response of NaCl.

The leaf of *Phaseolus aureus* cv. K-851 is inoculated in the Murashige and Skoog medium treated with $1 \times 10^{-10}$M GA, $1 \times 10^{-10}$M IAA and $1 \times 10^{-10}$M Kn and $1 \times 10^{-1}$M NaCl. It is found that the selected concentration of growth hormone reduces the effect of NaCl. The early callus initiation is observed after 2 days of inoculation and chlorophyll development occurred after 2 day of it. The multiplications of shoot formation are also triggered after 2 days and the early root and shoot initiation and the elongation of shoots occurs after 4 days. As compared to above responses growth is very fast and earliest and adverse effect of NaCl is maximally lowered.