



## Effect of Rhizobacterial isolate ALKP 12 on the seed germination and growth pattern of *Hordeum vulgare* L. and its comparison with chemical fertilizer and other treatments

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**Abstract :** It is generally observed that the productivity of soil and reduction of soil quality has occurred globally due to the excessive use of chemical fertilizer. Alternative methods to improve crop yield without chemical fertilizer is huge challenge worldwide. We have focused our efforts to isolate a plant growth promoter (PGP) from Dehradun, Uttarakhand and isolated a bacterial isolate ALKP12. We investigated this ALKP 12 isolate for PGP activity using *Hordeum vulgare* L. as model plant. After eight days of experiments done in pots in triplicates, we calculated the germination rate, shoot and root height and compared the result with chemical fertilizer, organic manure, water, combination of ALKP 12 and manure and a known bio inoculants. Our results showed that germination rate of seeds of *Hordeum vulgare* was up to 90 percent and averaged  $83 \pm 3.5$  percent which was significantly higher (statistically) when compared to other five treatment groups. The average shoot and root height of the model plant reached up to  $34.89 \pm 0.59$  cm and  $10.97 \pm 0.873$  cm respectively on the 8<sup>th</sup> day when the seeds were treated with high phosphatase producing isolate ALKP 12. only. This growth was significantly higher when compared with organic manure group that had  $11.530 \pm 1.056$  cm as shoot height and  $2.68 \pm 0.569$  cm as root height for the same day. These result suggest that ALKP 12 can be used as a bio inoculants for increasing growth of *Hordeum vulgare* after further experiments.

**Key Words:** crop yield, *Hordeum vulgare*, germination rate, shoot height, ALKP 12.