

EFFECT OF CENTESIMAL POTENCIES OF PYROGENIUM ON THE GROWTH AND MITOTIC INDEX OF *ALLIUM CEPA* ROOTS

SHABNUM SHABBIR AND M. ISHAQ KHAN

*Homoeopathic Research Laboratory,
Department of Botany,
University of Karachi, Karachi-75270, Pakistan*

In homoeopathic system of medicine, the use of small doses of potentised substances by succession or trituration and dilution excites the curative force of the substances. When substances are diluted beyond 10^{-24} , the original substances do not exist in the solution, still the biological activity of these substances could be demonstrated at much higher dilutions (Boyd, 1954; Khan *et al.*, 1991). Effect of homoeopathic remedies on the growth of fungi (Kumar & Kumar, 1980), wheat coleoptiles (Khan *et al.*, 1991) and young wheat seedlings (Jones & Jenkins, 1981) have shown promising results. Information on the effect of homoeopathic remedies on cell division seems to be lacking. The present report describes the effect of Pyrogenium potencies on cytological changes and root growth in the meristem of *Allium cepa*.

Alcoholic dilutions of Pyrogenium 30 C (Willmar Schwabe of Germany) was used. Potencies 31, 32, 33 and 34 C were prepared as centesimal dilutions (Khan *et al.*, 1991). Solutions of the potencies 30, 31, 32, 33 and 34 C were prepared by mixing 0.5 ml of these in 3 ml of distilled water and used for soaking one sheet of Whatman filter paper No.1 in 9 cm Petri dishes. Dilution of 0.5 ml of ethanol in 3 ml of water was used as control. These solutions were evaporated to dryness under a fan at room temperature ($22 \pm 2^\circ\text{C}$). Seeds of *Allium cepa* were immersed for 10 min., in 5% sodium hypochlorite solution, rinsed with distilled water and 50 seeds planted in each dish containing 3 ml of distilled water. After 3 days of germination in the dark at $22 \pm 2^\circ\text{C}$, the root tips were washed in distilled water and fixed in 1:3 acetic acid: alcohol (V/V) for 24 h. The fixed materials rinsed in 2% acetic acid were treated with 2% acetocarmine for 24 h. The stained root tip squashes were observed under a microscope (X400) and mitotic index calculated as follows:

$$\text{Mitotic index} = \frac{\text{Number of dividing cells}}{\text{Total number of cells}} \times 100$$

From each slide 10 fields of view were selected with a total of 3 slides for each treatment. After 7 days of growth in the dark, onion root length was measured using a millimeter graph paper. All readings were subjected to analysis of variance.

All the potencies of the drug Pyrogenium significantly promoted root growth of onion (Fig.1). Our previous growth studies with a number of homoeopathic drugs (Khan *et al.*, 1991) also showed a sinusoidal growth curve similar to the one observed in the present study. A significant promotion of mitotic index of onion roots was ob-

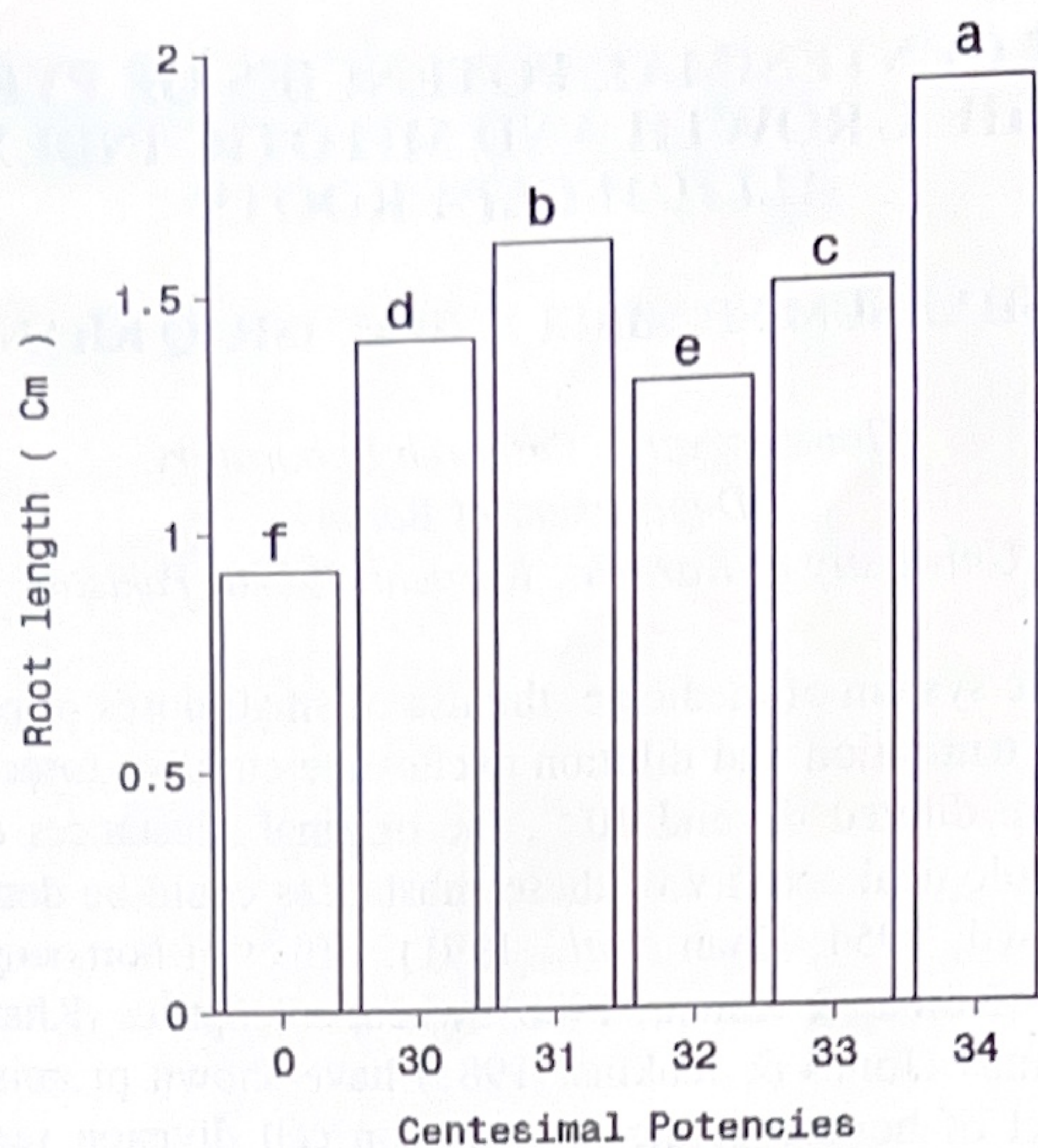


Fig.1. Effect of centesimal potencies (30 C - 34 C) of Pyrogenium on the root growth of *Allium cepa*.

Average of three replications, means followed by the same letter are not significantly different at 5% level by Duncan's multiple range test.

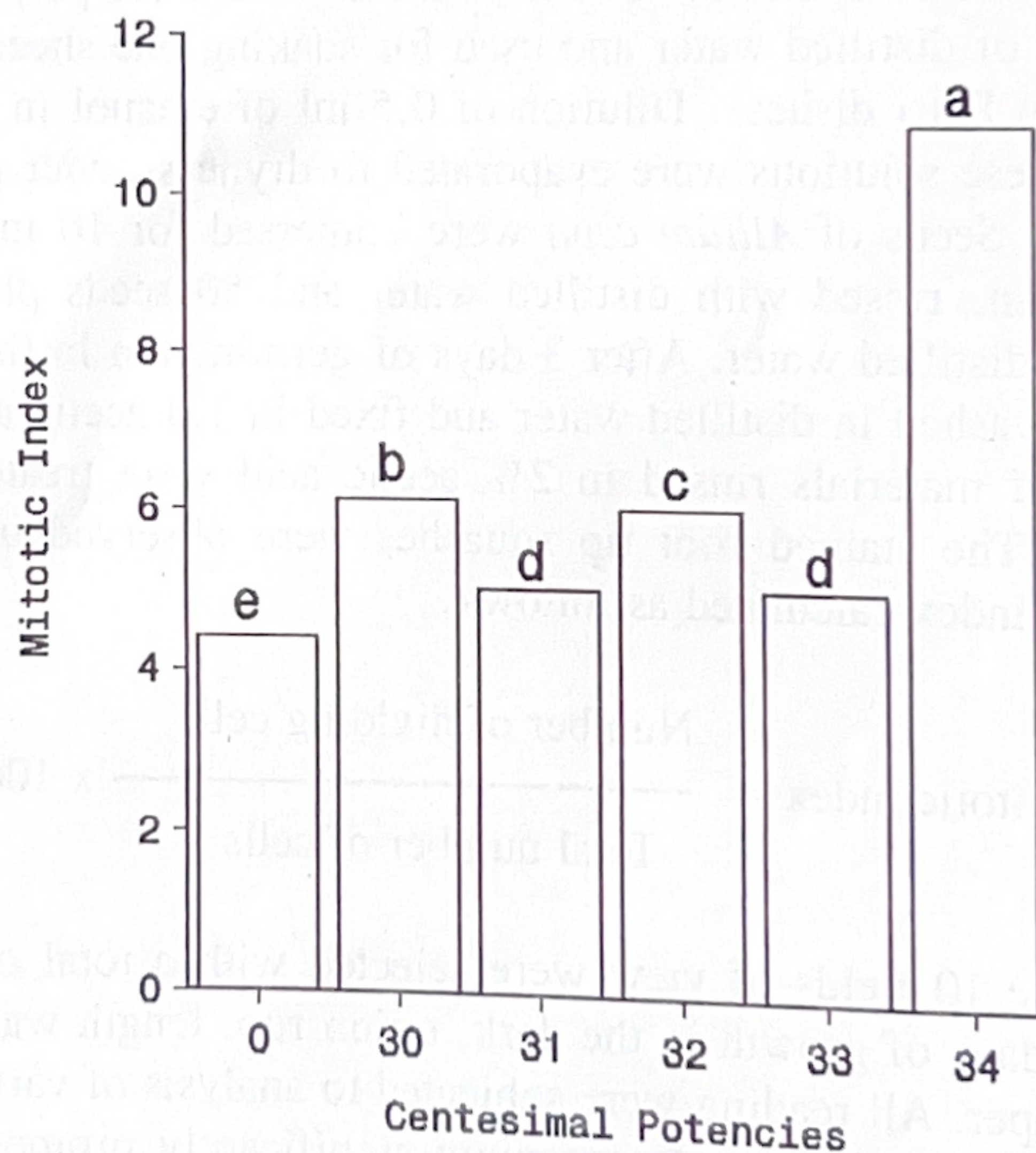


Fig.2. Effect of centesimal potencies (30 C - 34 C) of Pyrogenium on the mitotic index of *Allium cepa*.

Average of three replications, means followed by the same letter are not significantly different at 5% level by Duncan's multiple range test.

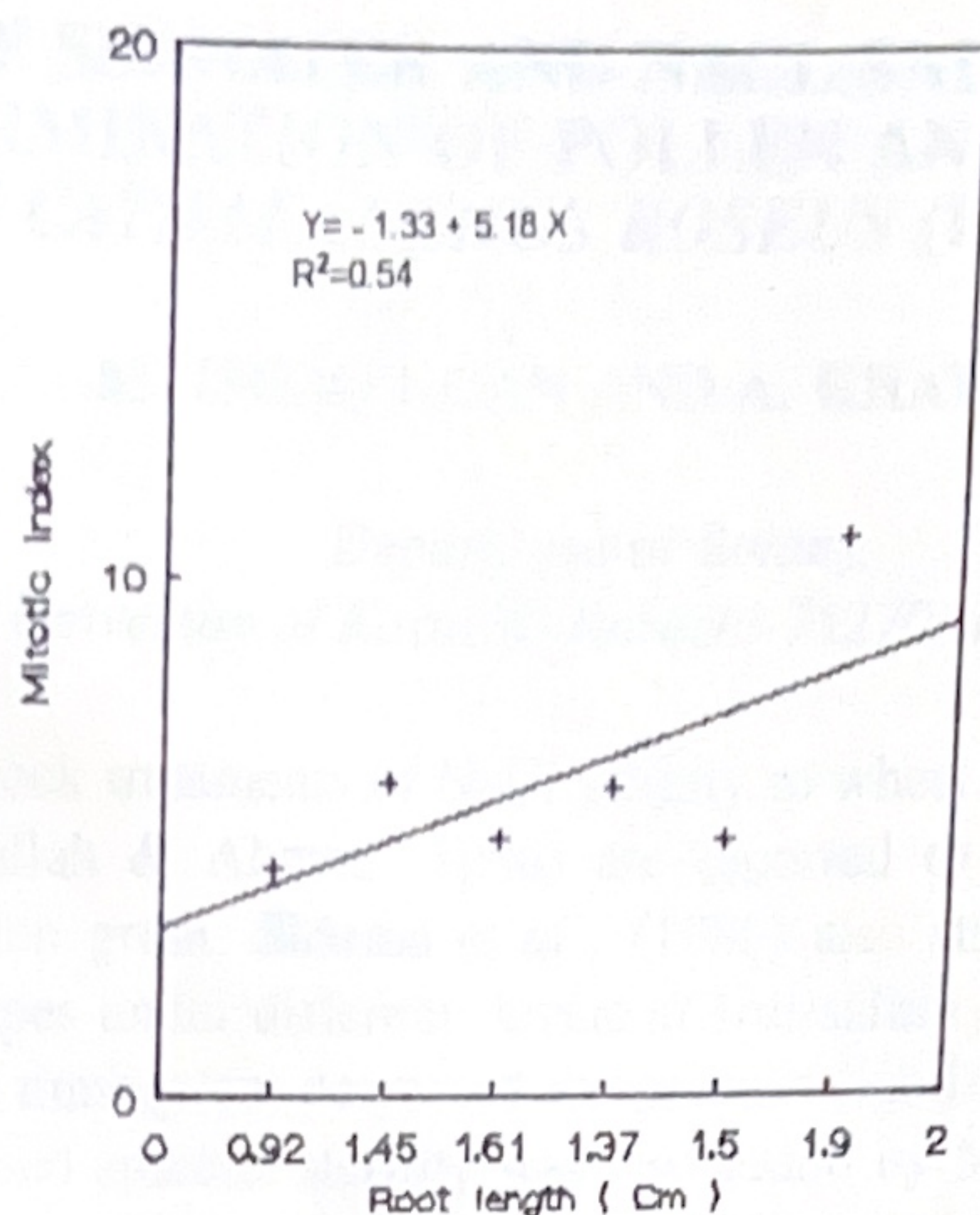


Fig.3. Relationship between mitotic index and root length of *Allium cepa* under the influence of homoeopathic drug Pyrogenum.

served (Fig.2). The mitotic index of 34 C treated roots was found to be doubled as compared to untreated control.

The slope indicating the relationship between cell division and root length was found to be significantly greater than zero ($p < 0.05$) indicating the promotory effect exerted by Pyrogenium. It would suggest that the increase in growth and mitotic index observed in the present study may contribute to our understanding of growth promotion of onion plant under the influence of a homoeopathic drug.

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