

A NOTE ON THE ROOT PROMOTING ACTIVITY OF *SALIX ACMOPHYLLA* BOISS

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ABSTRACT

The *Salix acmophylla* stem cuttings were extracted in methanol and partitioned by descending paper chromatography. Six colour zones were observed under UV-light. four of the substances, at Rf values 0.06, 0.18, 0.64 and 0.9 promoted root formation in mung-bean. The maximum of roots was produced by dark-green coloured zone located at 0.64 Rf.

INTRODUCTION

Salix acmophylla Boiss commonly grows from plains upto 1600 m elevation in Pakistan. It can be easily propagated vegetatively by stem cuttings. Stem cuttings are generally considered to be the ideal part of the plant to generate new roots which then grow into natural plants (Hartney, 1980).

The endogenous root promoting factors are found in active form in easy-to-root plants which may not be active or bound to other compounds in difficult-to-root plants (Nickell, 1986). The importance and need of root promoting factors is urgently felt to meet the growing demand for different ornamental and imported indoor plants in large cities of Pakistan. Such plants are expensive due to difficulty in their clonal propagation, which in turn is due to difficulty in rooting. *S.acmophylla* being an easy to root plant was selected for the study of endogenous root promoting factors.

MATERIALS AND METHODS

Soft-wood stem cuttings, 6-8" size, of *S.acomophylla* were collected in mid-February and soaked in water 48 hours to activate vegetative buds. Thereafter, they were freezed at - 20°C for 24 hours.

The frozen cuttings were crushed immediately in a mortar and extracted with absolute methanol. Hundred gm of plant material was extracted in 500 ml of methanol for 24 hours at room temperature of 25°C. The extract was filtered and concentrated under reduced pressure at 40°C to a final volume of 10 ml.

The concentrate was applied as a 5 mm wide streak on wide strip of Whatman's NQ. 3 chromatographic paper and developed unidirectionally with isopropanol: water (4:1 v/v) as a solvent, at 28°C, until solvent front was about 22 cm from the origin.

The root-initiating and root-promoting activity of *Salix* stem extract was determined qualitatively by mung-bean bioassay (Blazich and Heuser, 1979).

RESULTS AND DISCUSSION

Six zones of different colours appeared on the developed chromatograms. The Rf values for these coloured zones were 1) 0.06 (Yellowish-brown), 2) 0.18 (light-green), 3) 0.3 (light-blue), 4) 0.64 (dark-green), 5) 0.84 (dark-blue) and 6) 0.9 (pink).

The rooting activity of various coloured zones are shown in Figure 1. The column above the horizontal line shows the promotion of roots in mung-bean stem cuttings, while column below the line indicate the inhibition of rooting. In controls, root initiation was visible as scarce on stem cuttings and true roots were not observed during the experimental period. The results given are an average of 10 x 5 mung-bean stem cuttings per treatment.

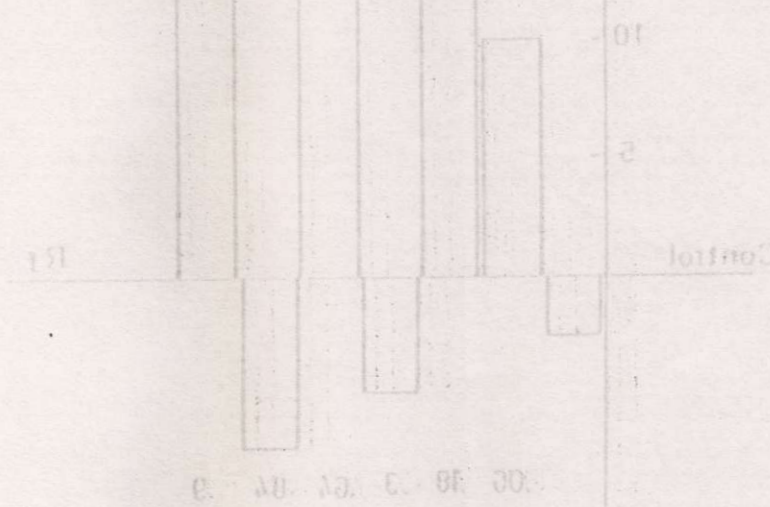
The maximum rooting occurred in dark green coloured zone with Rf value of 0.64. Here an average of 36 roots per 10 cuttings was observed. The second active zone was pink coloured with Rf value of 0.9, with 24 roots/10 cuttings. Light-green zone (Rf.0.18) and yellowish-brown (Rf.0.06) 15 and 10 roots respectively, per 10 cuttings. Meanwhile, light-blue (Rf.0.3) and dark-blue (Rf.0.84) coloured zones did not promote root formation at all.

CONCLUSION

From the results it seems that there are at least 4 root promoting factors found in *S.acmophylla* stem. Identification of these substances and tests for their use to promote rooting in difficult-to-root plants viz. Tamarack, Guava and Olive and various ornamental plants should be considered in future.

REFERENCES

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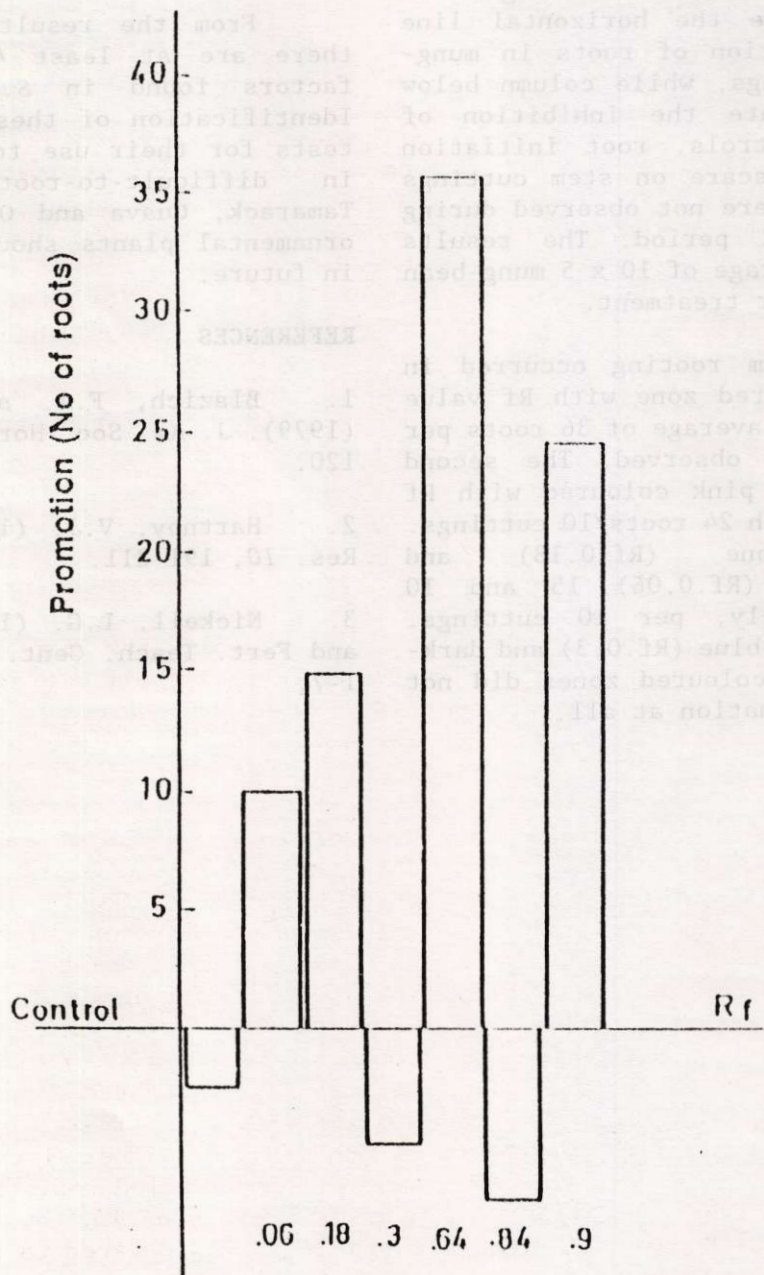


Fig.1 Histogram showing root promotion and inhibition activity by different substances of *Salix acmophylla* stem extract. The data are for number of roots per 10 cuttings and an average of 5replicates.