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Short Communication

Regeneration of *Rauwolfia vomitoria*

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Rauwolfia vomitoria **is a fast disappearing medicinal plant in Nigeria. Evidence from this current study showed that seedlings of the species under study are best raised by vegetative propagation. From total immerse method, 80% rooted stem cuttings was observed. Drip down method had 60% rooted stem cuttings while the Quick dip method had 70% rooted stem cuttings. The maximum value obtained from the seed germination studies was 50%. The growth medium of one part river sand and 3 parts humus rich topsoil was observed from this study to support the best seedling growth.**

Key words: *Rauwolfia vomitoria,* seed germination, vegetative propagation, regeneration.

INTRODUCTION

The plant *Rauwolfia vomitoria* belongs to the family Apocynaceae (Keay, 1989). It is mostly found in the forest part of southern Nigeria. The plant is also called serpent wood, serpent snake root and swezzle stick as well as asofeyeje, ira, ira-igbo in Yoruba, wadda in Hausa, akata in Bini and Mmoneba and utoenyin in Efik (Gill, 1992). The active principles as reported by Gill (1992) are alkaloids, rauwolfine, reserpine, rescinnamine, serpentine, ajmaline serpentinine, steroid-serposterol and saponin. The parts mostly used are the roots and leaves. Three billion dollars was, realized from drugs produced from plants collected from the wild (Ayensu, 1999). This species is still in the wild in spite of its importance. The purpose of this study is to investigate the best method of producing planting materials in a tree nursery. This will ensure its conservation. Plantations of *R. vomitoria* can thus be established and managed on sustainable basis.

MATERIAL AND METHODS

Soaking regime

R. vomitoria seeds were soaked for 30 min, 1, 2 3, 4 and 5 h respectively in distilled water and tap water was used for the control under the various soaking regimes. At the end of each soaking, the seeds were washed in tap water and sown in poly pot filled with river sand for the control. For the treatment a set of poly pots were filled with topsoil rich in humus and another set filled with a mixture of sand and humus rich top soil in a ratio of 1:1, 1:2 and 1:3. The pots were replicated 3 times in treatment as well as in the control. Ten seeds were sown in each poly pot and seed germination was monitored for 30 days. Germinated seeds were counted, mean value recorded and there after the seeds were discarded. At the end of the germination studies three seedlings were left in each pot to evaluate growth parameters; mean number of leaves, roots and overall growth in height.

Vegetative propagation

Stem cuttings of 3 cm in length with a single node each were used. 50 ppm indole butyric acid was used. A modification of the methods described by Gbadamosi and Oni (2005) and Richards (1999) were adopted.

Quick dip method: In this method one inch of the basal end of the stem cuttings were immersed in the solution for a period of 10 s. The cuttings were thereafter planted immediately.

Drip down method: With this method the solution was sprayed evenly on the cuttings after planting until drops went down to the media being used.

Total immerse method: In a suitable container the cuttings were immersed in the solution for 10 s before they were removed. They were planted immediately.

In all the experiments and control in the study the polypots used were arranged in randomized block design under light shade of palm leaves. Survivals, dead cuttings, mean number of roots per cutting and mean root length per cutting was recorded at the end of the study. The data obtained were subjected to statistical analysis. Weeding around the pots and within pots was manual using hand. Watering was done every morning and evening with 200 ml per polypot.

RESULTS AND DISCUSSION

In the germination studies the highest value obtained was 50%. Zero value was obtained in the soaking duration of

Table 1. Effects of 50 ppm of indole butyric acid on rooting stem cuttings of *Rauwolfia vomitoria*

Method	Survived and rooted cuttings (%)	Dead cuttings (%)	Mean number of roots	Mean length of longest root (cm)
Quick Drip	70	30	7 ±2.10	22.11 ±O.22
Drip Down	60	40	15.11 ± 2.01	24.2 ± 0.33
Total Immerse	80	20	22.0 ± 12.O	28.3 ± 0.22
Control	20	80	2.0 ± 0.43	3.11 ± 0.11

Table 2. % seed germination / seedling growth in growth media of river sand and humus rich top soil.

Ratio of growth mixture	% Seed germination/days			Other parameters		
	10 Days	20 Days	30 Days	Mean number of leaves	Mean number of roots	Height (cm)
IPRVS:1HRS	3.3	3.3	3.3	3 ±0.02	5 ±0.03	12.1
IPRVS:2PHRS	3.3	6.6	20	8 ±0.04	11 ±0.06	22.2
IPRVS:3PHRS	20	20	50	15 ±0.14	20 ±0.24	28.4
Control only Sand	3.3	3.3	20	2 ±0.01	4 ±0.01	6

PRVS = Part river sand.
PHRS = Part humus rich soil.

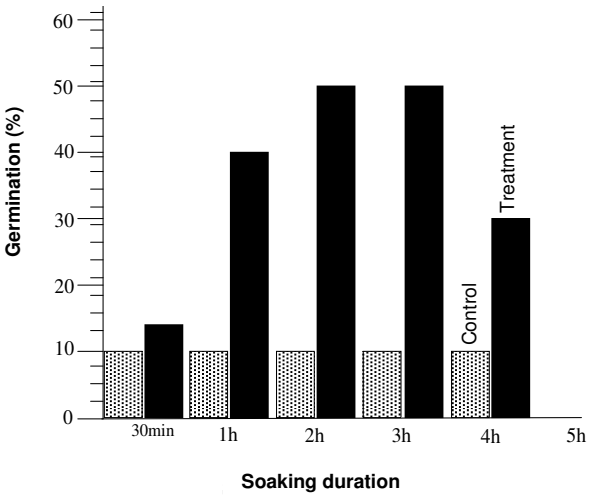

Figure 1. Effect of various soaking period (in distilled) water on seed germination of *Rauwolfia vomitoria* at 30 days after sowing.

5 h. Only 10% was obtained from the control (Figure 1). From the vegetative propagation studies, the highest value of 80% of survived and rooted stem cuttings was obtained in total immerse method (Table 1). Comparable values were also obtained in the other methods; the quick dip method had 70% survived and rooted stem cutting and in the drip down method 60% was obtained. The control has only 20% survived and rooted stem cutting. From Table 2 it is evident that the growth mixture of 1 part river sand and 3 parts humus rich soil yielded highest values. In this mixture 50% seed germination was obtained. Result from the study showed that seedling production is best achieved through vegetative propagation using total immerses method in 50 ppm indole butyric acid where 80% in rooting stem cuttings was achieved (Table 1). The work of Gbadamosi and Oni (2005), Longman (1993) and Richard (1999) confirm the ability of IBA to root stem cuttings of tropical trees. In seed germination studies maximum of 50% was observed (Figure 1). Best seedling growth was observed in the growth mixture of one part river sand and 3 parts humus rich soil (Table 2). This observation agrees with that of Liegel and Stead (1999).

In conclusion, if the phytomedicine from *R. vomitoria* should be available on sustainable basis, it should be grown in forest plantations.

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