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Response of Sansevieria trifasciata cuttings On the Soaking Time of Vigna radiata Sprouts Extract

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ABSTRACT

This study aimed to determine the effect of soaking time of Vigna radiata sprout extract on the growth of Sansevieria trifasciata leaf cuttings. The study was conducted at the Faculty of Agriculture's screen house, UGJ Cirebon used a Completely Randomized Design (CRD) with five treatments of immersion duration (10, 20, 30, 40, and 50 minutes) each repeated five times. The parameters observed included root length, time to shoot emergence, number of shoots, leaf thickness, chlorophyll content, and plant growth rate. The analysis results showed that the immersion duration significantly affected root length, initial shoot emergence, and number of shoots, especially at 40 and 60 days after planting. The best treatment was obtained at 30 minutes of immersion which consistently produced the most optimal root and shoot growth. Meanwhile, there was no significant effect on leaf thickness, chlorophyll content, and plant growth rate in all treatments. The phytohormone content in Vigna radiata sprout extract such as auxin, cytokinin, and gibberellin is thought to play a role in stimulating root and shoot growth in the early phase of snake plant cutting propagation. This study proves that natural PGR from mung bean sprouts has the potential as an environmentally friendly alternative in supporting the vegetative propagation of ornamental plants.

Keywords: mother-in-law's tongue, leaf cuttings, soaking time, natural growth regulators, mung bean sprouts

1. INTRODUCTION

Sansevieria or mother-in-law's tongue is one of the ornamental plants that has many fans in Indonesia. *Sansevieria*is a genus of the Agavaceae family. Agavaceae is a family of the Liliopsida class which includes more than 200-300 species, one of which is the species *Sansevieria trifasciata*. *Sansevieria trifasciata* is a herb and is a xerophyte plant that grows to a height of between 20-175 cm which is spread across both tropical and subtropical areas, from lowlands to highlands. *Sansevieria trifasciata* characterized by thick leaves due to its high water content.

This plant is used as an outdoor plant as well as an indoor plant. *Sansevieria* it grows easily in the yard and requires minimal maintenance. This plant is cultivated for its beautiful leaf structure and color. The variety of leaf shapes, colors, sizes, and patterns makes this plant highly economically valuable. Besides its ornamental use, another factor driving Sansevieria's popularity is its ability to absorb pollutants (Samosir et al., 2022).

Breeding *Sansevieria* propagation can be done generatively and vegetatively. Generative propagation uses seeds, while vegetative propagation can be done using leaf cuttings, transplanting

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shoots, growing rhizome shoots, and tissue culture. The method of propagation or propagation by leaf cuttings is widely used in snake plants because it does not require a long time to produce a large number of cuttings. In just 1-2 months, hundreds of shoots can be produced from leaf cuttings. If using shoots, propagation is very slow, taking about 1 year to produce just 2 shoots. The criteria for plants used in vegetative propagation are having high adaptability and fast growth (Apriliani, et al., 2015).

Roast snake plant leaves can be divided into 3 parts, namely the top/tip, middle and bottom/base of the leaf (Rosawanti, 2016). The problem with planting material originating from the tip of the stem is that it has a low carbohydrate content, making it very difficult to form roots, because carbohydrates are the basic ingredient for root formation. Meanwhile, planting material originating from the base is difficult to root because this part is generally too old and the skin has begun to harden, making it difficult for root primordia to penetrate the cell walls (Wiraswati & Badami, 2018). Kurniawan et al. (2021) stated that cutting propagation has disadvantages, one of which is a weak root system. This deficiency can be overcome by administering plant growth regulators (PGRs). PGRs act as biocatalysts that accelerate the synthesis of compounds in cells and use available reserves in the formation of new plant organs (Yanengga & Tuhuteru, 2020).

Plant growth regulators (PGRs), or phytohormones, are non-nutritive organic compounds that, in small amounts or at low concentrations, qualitatively stimulate plant growth and development. Several types of plant growth regulators exist, including auxins, cytokinins, gibberellins, abscisic acid, ethylene, and salicylic acid (Fatimah et al., 2022). Auxins, cytokinins, and gibberellins can be found in plants, both endogenously and exogenously. Endogenous compounds are present in plants in small amounts, necessitating the addition of organic compounds, one of which is bean sprout extract.

Extraction of bioactive plant compounds can be found in mung bean sprouts. Mung bean sprouts (bean sprouts) are a type of vegetable that is commonly consumed, easily obtained, economical, and does not produce compounds with toxic effects. Auxin, gibberellins, and cytokinins interact to stimulate plant growth and development, including seed germination (Kurniati et al., 2017). The phytohormone contents of mung bean sprout extract are IAA 3.74%, cytokinin (kinetin) 4.42%, cytokinin (zeatin) 4.09%, gibberellin GA1 1.50%, while ethylene was not detected (Sunandar et al., 2024). Based on the results of the analysis of mung bean sprouts at Unpad in 2023, the auxin phytohormone content was 34.48 ppm, while the results of the analysis

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of mung bean sprouts at Unpad in 2025 showed that the cytokinin phytohormone content was 2.73 ppm and the gibberellin phytohormone content was 84.26 ppm.

Mung bean sprout extract is applied by soaking the cuttings with plant growth regulators (PGRs), which aim to stimulate root growth and accelerate plant growth. Factors influencing soaking time include the type of growth regulator, its concentration, the type of plant, and environmental conditions (Alfriyadi & Wijayanto, 2024).

Based on the description above, it is necessary to conduct research on the response of mother-in-law's tongue cuttings (***Sansevieria trifasciata***) On the Soaking Time of Green Bean Sprouts Extract (***Vigna radiata***). Referring to the background explanation above, the problem identification can be put forward, namely whether the length of soaking bean sprout extract has a real effect on the growth of snake plant cuttings (***Sansevieria trifasciata***)? What is the optimal soaking time for bean sprout extract for the growth of snake plant cuttings (***Sansevieria trifasciata***)?.

The aim of this study was to determine whether the length of soaking in bean sprout extract had a significant effect on the growth of snake plant cuttings (***Sansevieria trifasciata***) and to find out what the optimal soaking time for bean sprout extract is for the growth of snake plant cuttings (***Sansevieria trifasciata***).

The usefulness of this research is for researchers, to increase knowledge and references for researchers regarding the effect of the length of soaking of mung bean sprout extract on the growth of snake plant cuttings (***Sansevieria trifasciata***) and for the general public, providing information about the benefits of bean sprout extract which can be used as a natural growth regulator, especially for snake plants (***Sansevieria trifasciata***).

2. RESEARCH METHOD

The experiment will be conducted at the Screen House experimental field of the Faculty of Agriculture, Swadaya Gunung Jati University, Cirebon. The research location is approximately 4 meters above sea level (masl) with an average temperature of 25°C-33°C and an average humidity of 65%-85%. The experiment will be conducted for 60 days, from April to June 2025. The research method used is an experimental method with a Completely Randomized Design (CRD). For the treatment of the soaking time of bean sprout extract, which consists of 5 (five) treatment levels, namely P_1= 10 minutes, P_2 = 20 minutes, P_3= 30 minutes, P_4 = 40 minutes and P_5= 50 minutes. Each treatment was repeated 5 (five) times, resulting in 25 experimental units. Each treatment

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consisted of 7 polybags. The number of cuttings per polybag was 1 cutting and the total number of cuttings was 175 cuttings. So the total number of polybags was 175 polybags.

The tools used in this study are a knife or cutter, a ruler or meter, a hoe, a measuring cup, a small shovel, a bucket, a rectangular thinwall measuring 17.5 × 12 × 7.5 cm, a blender, a spoon, a filter cloth, a scale, an HTC-2 thermometer, a digital lux meter, a mobile phone, an oven, a digital thickness caliper, and others. The materials used in this study were 15 cm long snake plant cuttings from the mother plant obtained from the Faculty of Agriculture Experimental Field.UGH, fresh bean sprouts, soil, burnt rice husks, 25 × 25 cm polybags, distilled water and label paper.

Supporting observations included average daily temperature, air humidity, and light intensity inside the screen house. Primary observations included destructive and non-destructive measurements of root length, shoot emergence time, shoot number, leaf thickness, chlorophyll content, and plant growth rate. Data were analyzed using analysis of variance with a linear model as proposed by Wijaya (2018).

$$Yij = \mu + Pi + Aij$$

Information :

Yay = Observation results of treatment P (immersion duration) i, plot j

M = General average value

Pi = Influence of treatment P (soaking time) i

Ɛij = Effect of experimental error

Based on the linear model, it is arranged in a table listing the variance analysis.
as presented in Table 1.

Table 1. Variety Fingerprint Table

Diversity	DB	JK	KT	F	$F_{0,05}$
Treatment	4	In Yij2/r-FK	JK(P)/DB(P)	KT (P)/KT(G)	2,866
Error	20	JKT-JKP	JK(G)/DB(G)		
Total	24	ΣYij2-FK			

Source: Wijaya, 2018.

Information :

DB = Degrees of Freedom

JK = Sum of Squares

KT = Middle Square

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To determine whether there is a significant effect of the tested treatment, an F-test is performed. If there is an effect of the treatment on plant growth that is known through a significance of p < 0.05 or F count > F table, then H0 is rejected, meaning that the tested treatment has a significant effect on the observed growth. The test will be continued with the Duncan Multiple Range Test (DMRT) (Wijaya, 2018) as follows:

$$LSR = SSR_{0,05(DB\text{-}Galat)} \times S_x = SSR_{0,05(DB\text{-}Galat)} \times \sqrt{\frac{KTG}{repeat}}$$

Information :

LSR = *Least Significant Ranger*

SSR = *Significant Studentized Range*

Sx = Standard Error

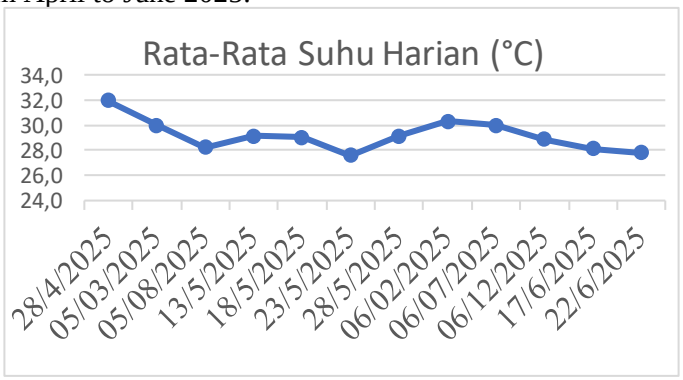
DB = Degrees of freedom

CTG = Mean Square Error

3. RESULTS AND DISCUSSION

Supporting Observations

This experiment was conducted in *Screenhouse* experimental field of the Faculty of Agriculture, Swadaya Gunung Jati University, Cirebon. The research location is at an altitude of approximately 4 meters above sea level (mdpl). Based on temperature and humidity observations during the study from April to June 2025.



Graph 1. Average Daily Temperature

Based onIn Graph 1, the climatic and environmental conditions in the experimental field adequately meet the growth criteria required for snake plants, with temperatures ranging from 27°C to 31°C. This aligns with Yani & Warid's (2022) statement, which states that these conditions

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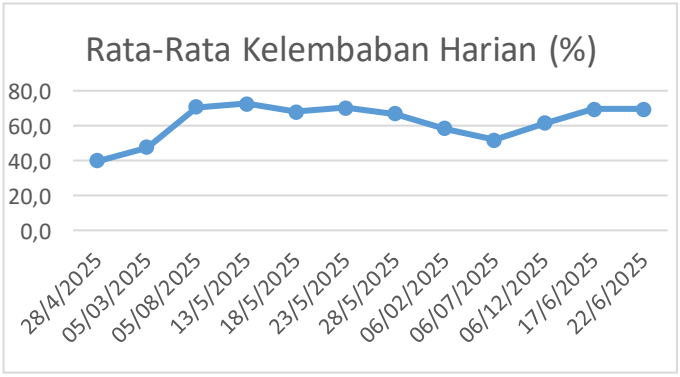
allow snake plants to grow well with optimum daytime temperatures of 24°C to 29°C and nighttime temperatures of 18°C to 21°C.



Graph 2. Average Daily Humidity

Based on Graph 2, humidity conditions at the experimental site ranged from 41% to 78%. Humidity levels decreased during the experiment. This decrease was due to the climate entering the dry season, resulting in higher air temperatures. The lowest humidity levels occurred during the day. This is supported by observations of sunlight intensity, which showed a significant difference in light intensity between morning and afternoon. However, this did not affect the growth of the snake plant during the study.

Key Observations

1. Root Length (cm)

The results of statistical analysis showed that the treatment of soaking mung bean sprout extract had a significant effect on the root length of snake plant cuttings at 40 and 60 days after planting, while there was no significant difference at 20 days after planting. The results of statistical analysis are presented in Table 2.

Table 2. Effect of Soaking Time of Mung Bean Sprouts Extract on Root Length

Treatment	Root Length (cm)		
	20 HST	40 HST	60 HST
P1 (10 Minute Soaking)	0.28 a	4.62 a	8.36 ab
P2 (20 Minute Soaking)	0.34 a	5.08 a	10.44 bc
P3 (30 Minutes Soaking)	0.48 a	7.48 b	11.86 c
P4 (40 Minutes Soaking)	0.24 a	4.34 a	8.90 ab
P5 (50 Minutes Soaking)	0.22 a	3.96 a	7.26 a

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Description: The average number followed by the same letter in the same column shows no significant difference according to Duncan's Multiple Range Test at the 5% level.

Based on Table 2, at 40 and 60 days after planting, the difference in soaking time began to show a significant effect on the average growth of root length. Treatment P3 (30-minute soaking) produced the highest root length in both observations (7.48 cm at 40 days after planting and 11.86 cm at 60 days after planting). The absorption process in plant cells is influenced by the permeability of the plant cell membrane and the difference in water potential between the inside and outside of the cell. Absorption by plant cells can increase turgor pressure (pressure due to the entry of water into the cell) in the cell and then will occur cell enlargement. The PGR solution will enter through the semi-permeable cortex cells and then move towards the xylem vessels through the cell walls. The PGR solution absorbed in the cuttings will increase depending on the length of soaking, this will certainly increase growth, both root and shoot growth (Santoso, 2017).

As a plant without cambium, mother-in-law's tongue (*Sansevieria trifasciata*) do not form massive callus like in cambium plants. Instead, adventitious roots often develop directly from differentiated parenchymal cells at the base of the cutting or from the nodes (Adnyana & Pradnyawati, 2019). Therefore, hydration of vital cells at the base of the cutting through imbibition restores turgor and activates metabolism, as well as preparing these cells for division and differentiation into root primordia. These results indicate that differences in the length of immersion in mung bean sprout extract as a natural Plant Growth Regulator (PGR) containing auxin, cytokinin, and gibberellin can affect root length. The reaction of the immersion. Mung bean sprout extract has long been known as a source of natural PGR. Its main content is auxin, a hormone that is essential in the process of root initiation and elongation. Auxin stimulates cell division and differentiation of vascular tissue, which is important for the formation of new roots (Arti & Mukarlina, 2017).

Cytokinins play a synergistic role with auxin, particularly in cell division and root hair development, which is crucial for nutrient uptake by plants. A balanced auxin-cytokinin ratio is crucial; the correct ratio will promote the development of a strong and healthy root system. Combinations of natural growth regulators (including cytokinins) can enhance root growth in cuttings. The significant effects at 40 and 60 DAP indicate that there is a latency period for these hormones to act and trigger a measurable root growth response. At 20 DAP, roots may have only just begun to form microscopically or may not be long enough to show statistically significant differences.

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2. Time of Shoot Emergence (days)

The statistical analysis showed that soaking in mung bean sprout extract significantly affected the shoot emergence time of snake plant cuttings. The statistical analysis results are presented in Table 3.

Table 3. Effect of Mung Bean Sprouts Extract Soaking Time on Emergence TimeShoots

Treatment	Average (days)
P1 (10 minutes soaking)	38.47 ab
P2 (20 minutes soaking)	35.07 ab
P3 (30 minutes soaking)	29.67 a
P4 (40 minutes soaking)	32.53 a
P5 (50 minutes soaking)	43.27 b

Description: Average number followed by the same letter in the same column showed no significant difference according to Duncan's Multiple Range Test at the 5% level.

Based on Table 3, it can be seen that the treatment of soaking mung bean sprout extract on snake plant leaf cuttings showed significant variation in the time of shoot emergence. Treatment P3 (30-minute soaking) resulted in the fastest shoot emergence time with an average of 29.67 days. This result was not significantly different from P4 (40 minutes) which was 32.53 days, P2 (20 minutes) 35.07 days, and P1 (10 minutes) 38.47 days. However, treatment P5 (50-minute soaking) showed the longest shoot emergence time, which was 43.27 days, which was significantly different from treatments P3 and P4.

The soaking time of mung bean sprout extract as a natural plant growth regulator (PGR) significantly affects the rate of shoot initiation. In the initial soaking phase, cuttings passively absorb water through imbibition. Effective cellular rehydration is vital, as water fills cell vacuoles, restores turgor, and activates various metabolic processes. This water availability is essential for activating enzymes and initiating protein synthesis necessary for cell division and the formation of new organs, including shoots. An appropriate soaking time, such as at P3, allows cuttings to be fully hydrated and their cells ready to respond to hormonal signals. In non-cambium plants such as snake plant, shoots can emerge directly from parenchymal cells at the base of the cutting or from dormant axillary buds.

The results of this study are in line with the findings of Setiawan & Cahyani (2022) which stated that in leaf cuttings *Zamioculcas zamiifolia*, shoot emergence has a longer latency period

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than root initiation. A proper initial soaking provides a good start, but the shoot differentiation process requires time for sufficient resource accumulation and hormonal signals after the initial imbibition. Conversely, excessive soaking, as seen in P5, can deplete these reserves and delay or even prevent shoot emergence.

Mung bean sprout extract has long been known as a natural source of plant growth regulators (PGRs) rich in auxin and cytokinin. Murdaningsih (2019) suggests that varying soaking times for auxin-rich mung bean sprout extract can affect shoot growth. Auxin plays a role in promoting cell division and elongation, crucial processes in shoot formation. Meanwhile, one of the main roles of cytokinin is breaking shoot dormancy. Cytokinin works synergistically with auxin to promote cell division in cuttings, ultimately initiating adventitious shoot formation, thus accelerating shoot emergence (Asra et al., 2020). The interaction between cytokinin and auxin is crucial in the process of cell differentiation. Harjadi (2019) explains that high auxin and low cytokinin concentrations can promote root development, while low auxin and high cytokinin concentrations tend to stimulate shoot development. Therefore, the optimal balance between these two hormones, which is regulated by the duration of immersion in mung bean sprout extract, is crucial for the effective shoot growth response in snake plant leaf cuttings.

3. Number of shoots (buds)

The results of statistical analysis showed that the treatment of soaking mung bean sprout extract had a significant effect on the number of shoots of snake plant cuttings at the age of 40 HST and 60 HST, while there was no significant difference at the age of 20 HST. The results of the statistical analysis are presented in Table 4.

Table 4. Effect of Soaking Time of Mung Bean Sprouts Extract on the Number of Shoots

Treatment	Number of shoots (buds)		
	20 HST	40 HST	60 HST
P1 (10 Minute Soaking)	0.07 a	0.73 ab	1.67 b
P2 (20 Minute Soaking)	0.20 a	1.40 bc	2.00 b
P3 (30 Minutes Soaking)	0.33 a	1.87 c	2.80 c
P4 (40 Minutes Soaking)	0.13 a	0.60 a	1.00 a
P5 (50 Minutes Soaking)	0.00 a	0.40 a	0.73 a

Description: The average number followed by the same letter in the same column shows no significant difference according to Duncan's Multiple Range Test at the 5% level.

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Based on Table 4, at 20 days after planting, there was no significant difference in shoot number between treatments. In this early phase, the cuttings are still in the adaptation and initial growth initiation phase. The energy available from the cuttings' initial food reserves is primarily used for root formation and recovery, rather than for significant shoot growth (Wahyuni et al., 2021). Furthermore, the slow rate of photosynthesis due to incomplete leaf growth (Masli et al., 2019) results in limited carbohydrate production, insufficient to support massive new shoot formation.

However, at 40 and 60 days after planting, the soaking time of mung bean sprout extract showed a significant effect on the growth of the number of shoots. Treatment P3 (30-minute soaking) consistently produced the highest number of shoots and was significantly different from the other treatments, both at 40 days after planting (1.87 shoots) and 60 days after planting (2.80 shoots). The 30-minute soaking time is the most optimal for stimulating shoot formation in snake plant leaf cuttings. New shoots usually develop from the apical growing point or existing lateral shoots at the base of the stem or rhizome. Soaking in water only provides optimal hydration conditions, but will not significantly trigger new shoot formation if other conditions (nutrients, light, temperature) are not supportive.

On the other hand, prolonged soaking, such as in P5 (50 minutes), tends to inhibit growth. This is in line with the concept that the longer the soaking time, the more likely the cuttings are to absorb auxin hormones beyond the optimum limit, which can actually inhibit lateral shoot growth (Apriliani et al., 2015). The effectiveness of mung bean sprout extract in stimulating shoot growth is supported by its auxin and cytokinin content. Wiraatmaja (2017) stated that shoot growth occurs due to cell differentiation triggered by cytokinin and auxin hormones that work synergistically. Auxin, although known to play a role in rooting, is also involved in apical dominance and lateral shoot formation. Meanwhile, cytokinin specifically plays a role in breaking lateral shoot dormancy and encouraging cell division, thereby increasing the number of shoots formed.

4. Leaf Thickness (mm)

The results of the statistical analysis showed that the treatment of soaking in mung bean sprout extract had no significant effect on the thickness of the leaves of snake plant cuttings at the age of 20, 40 and 50.HSTand 60 HST. The results of the statistical analysis are presented in Table 5.

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Table 5. Effect of Mung Bean Sprout Extract Soaking Time on Leaf Thickness

Treatment	Leaf Thickness (mm)		
	20 HST	40 HST	60 HST
P1 (10 Minute Soaking)	2.11 a	3.53 a	5.23 a
P2 (20 Minute Soaking)	2.23 a	3.80 a	5.57 a
P3 (30 Minutes Soaking)	2.53 a	5.27 a	7.18 a
P4 (40 Minutes Soaking)	2.12 a	4.24 a	5.69 a
P5 (50 Minutes Soaking)	1.91 a	3.29 a	4.67 a

Description: The average number followed by the same letter in the same column shows no significant difference according to Duncan's Multiple Range Test at the 5% level.

Based on Table 5, at all observation phases (20, 40, and 60 days after planting), there was no significant difference in leaf thickness among all treatments of mung bean sprout extract immersion duration. This occurs because the application of mung bean sprout extract with various immersion durations did not substantially affect the leaf thickness of snake plant cuttings due to the nature of leaf growth in monocotyledonous plants such as snake plant. Monocotyledonous plant leaves do not have a vascular cambium that allows secondary growth (thickening of new tissue). Leaf thickness growth mainly occurs during primary development, namely through the division and enlargement of mesophyll and epidermal cells during the early stages of their formation. After the leaves reach maturity, a significant increase in thickness generally does not occur, even with external stimulation (Taiz et al., 2015).

According to Fitrianti (2021), although thicker leaves have the potential to have greater nutrient reserves or better photosynthetic efficiency, this is not always followed by a significant increase in vegetative growth, including thickness, in mature cuttings or those entering a certain growth phase. Mung bean sprout extract, which is rich in auxin and cytokinin, plays a greater role in triggering the formation of new roots and shoots, rather than in modifying the structure of existing leaves. Therefore, the effect of soaking on the thickness of snake plant leaf cuttings is not significant because the mechanism of leaf thickness growth in this plant is different from the secondary growth that occurs in cambium plant stems.

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5. Chlorophyll Content (mg/g)

The results of statistical analysis showed that the treatment of soaking mung bean sprout extract had no significant effect on the chlorophyll content of snake plant leaf cuttings at the age of 20, 40 and 50.HSTand 60 HST. The results of the statistical analysis are presented in Table 6.

Table 6. Effect of Soaking Time of Mung Bean Sprouts Extract on Chlorophyll Content

Treatment	Chlorophyll Content (mg/g)
P1 (10 minutes soaking)	0.87 a
P2 (20 minutes soaking)	1.20 a
P3 (30 minutes soaking)	0.80 a
P4 (40 minutes soaking)	1.14 a
P5 (50 minutes soaking)	1.11 a

Description: The average number followed by the same letter in the same column shows no significant difference according to Duncan's Multiple Range Test at the 5% level.

Table 6 shows no significant differences in chlorophyll content among the various mung bean sprout extract soaking treatments across all observations. This indicates that soaking treatments, despite potentially containing growth regulators, do not directly or significantly affect chlorophyll levels in snake plant leaf cuttings.

Several factors may explain why soaking had no significant effect on the chlorophyll content of these cuttings. In the early stages of vegetative propagation, such as those occurring with immature leaf cuttings, growth is determined more by nutrient reserves and internal hormone activity than by full photosynthetic capacity. Cuttings that lack a well-developed root system cannot fully utilize photosynthesis to support significant growth. Therefore, even high chlorophyll levels may not directly correlate with statistically measurable growth increases at this stage. Energy reserves from the host organ become more crucial in the early stages.

Although water availability is a fundamental factor influencing chlorophyll content because water is directly involved in photosynthesis and maintains cellular turgor, which is essential for chloroplast integrity and function (Mohanty et al., 2021), soaking the extract may only provide adequate hydration without triggering a surge in chlorophyll synthesis. Snake plant, although tolerant to a wide range of conditions, is essentially a terrestrial plant that requires good gas exchange. Prolonged soaking, especially if the plant is not adapted to anaerobic (oxygen-deficient) conditions, can cause tissue stress. Anoxia inhibits cellular respiration, damages cell

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membranes, and disrupts protein and pigment synthesis, including chlorophyll, which can ultimately lead to chlorosis (yellowing of leaves) due to chlorophyll degradation.

6. Plant Growth Rate (g/day)

The statistical analysis showed that the addition of organic matter to the growing medium for snake plant cuttings had no significant effect on growth rate. The results of the statistical analysis are presented in Table 7.

Table 7. Effect of Soaking Time of Mung Bean Sprouts Extract on Plant Growth Rate

Treatment	Plant Growth Rate (g/day)	
	20 HST and 40 HST	40 HST and 60 HST
P1 (10 Minute Soaking)	0.03 a	0.02 a
P2 (20 Minute Soaking)	0.02 a	0.04 a
P3 (30 Minutes Soaking)	0.03 a	0.01 a
P4 (40 Minutes Soaking)	0.02 a	0.03 a
P5 (50 Minutes Soaking)	0.01 a	0.02 a

Description: The average number followed by the same letter in the same column shows no significant difference according to Duncan's Multiple Range Test at the 5% level.

Based on Table 7, it is clear that the growth rate of snake plant cuttings did not show any significant differences among all treatments of mung bean sprout extract immersion duration observed. This indicates that the applied mung bean sprout extract immersion duration did not significantly affect the rate of cutting biomass accumulation. This is because the ability of cutting organs, especially in absorbing water, nutrients, and assimilates produced by photosynthesis, has a relatively similar capacity across treatments. In the early stages of cutting growth, growth rate may be more influenced by internal factors such as initial food reserves and the basic ability of the cutting to form a root system and shoots, rather than solely by the external immersion treatment.

Table 7 also shows that almost all treatments experienced a slight decrease in growth rate from 40 to 60 days after planting compared to the previous period. This is because the cuttings had depleted most of their initial food reserves. Meanwhile, their photosynthetic capacity (to produce new assimilates) had not increased drastically to offset the increasing growth needs, or perhaps the photosynthetic rate between the two observation periods did not differ significantly. The accumulation of organic compounds, a key growth indicator, did not show a substantial increase.

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As conveyed by Pandafani (2019), plant dry weight is a relevant growth indicator because it reflects the accumulation of organic compounds synthesized by plants from water and carbon dioxide. Thus, these results indicate that the mung bean sprout extract treatment under these experimental conditions was not able to significantly trigger an increase in the biomass accumulation of snake plant cuttings.

4. CONCLUSIONS

Based on the research results, the response of mother-in-law's tongue cuttings***(Sansevieria trifasciata)*** on the soaking time of mung bean sprout extract (***Radiant vine***) it can be concluded that soaking mung bean sprout extract on snake plant cuttings has a significant effect on root length, the initial emergence of shoots and the number of shoots. The soaking time of mung bean sprout extract on snake plant cuttings for 30 minutes gave the best results on the average root length, the initial emergence of shoots and the number of shoots.

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