Data Article

Callus and etiolation induction data from explants of *Solanecio biafrae* (Olive & Hierne) C. Jeffrey cultured in the dark

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**A R T I C L E   I N F O**

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**A B S T R A C T**

Different types of explant (leaf, nodal and petiole explant) from in vitro grown plant maintained on Murashige and Skoog (MS) medium, were cultured on MS medium supplemented with various concentrations of 2, 4-Dichlorophenoxy acetic acid (2, 4-D) (0, 0.5, 1.0, 1.5 and 2.0 mg/l) in dark condition. Data on callus formation was recorded on 10 days after culture. Number of explants forming callus, callus colour and type were recorded. The plant growth regulator-free media which served as the control induced etiolation resulting in long hypocotyls from the nodal explants.

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**Specifications Table**

| Subject area       | Biology                      |
|--------------------|------------------------------|
| More specific subject area | Plant Cell and Tissue culture |
| Type of data       | Table and figure             |

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How data was acquired
Aseptically transferred in laminar flow hood and grown in plant growth chamber

Data format
Raw and analyzed

Experimental factors
Nodal explants from potted plants were cultured on Murashige and Skoog (MS) medium to get axenic in vitro grown plantlet.

Experimental features
Leaf, nodal and petiole explants from in vitro grown plantlet were cultured on Murashige and Skoog (MS) medium supplemented with varied concentrations of 2,4-Dichlorophenoxyacetic acid (2,4-D) in dark condition. 10 replicates in a completely randomized design.

Data source location
Plant tissue culture laboratory of Covenant University, Ota. Ogun State. Nigeria.

Data accessibility
Data are presented in this article.

Value of the data
- The data furnishes scientific body with information on callus induction of Solanecio biafrae using the concentrations which brings about desired morphogenic response
- This data on etiolation offers the advantages of promoting the development of axillary buds and reducing the level of fungal and viral infection at the apices.
- This data is valuable for further study on developing efficient regeneration protocol for S. biafrae.

1. Data
In the data, effect of 2, 4-Dichlorophenoxy acetic acid on callus formation is shown for three explant types from Solanecio biafrae plant grown in vitro under the dark condition. The age of the explant source for plant tissue culture is significant with preference to younger plants. The age barrier is therefore overcome with the use of in vitro grown plantlets (1). Fig. 1a-c represents the images of callus being formed by different explants type (nodal, petiole and leaf explants). Callus formation was observed on 10 days after culture. Meanwhile, Fig. 2 represents the image of etiolated shoot formation with an average of 4 roots formed from nodal explants cultured on MS basal medium without 2, 4-D (experimental control). Moreover, Tables 1 and 2 show the callogenic and morphogenic responses of S. biafrae explant types to the varied concentrations of 2, 4-D.

2. Experimental design, materials and methods
2.1. Source of primary biological material and disinfection
Plants of S. biafrae were purchased from Lafenwa market in Abeokuta and cultivated via stem cutting in pots under the tree at the College of Science and Technology of Covenant University, Ota, Ogun State. Nodal segments was collected from the potted plants and disinfected under sterile conditions inside a laminar air flow cabinet. The nodal segments were surface sterilized by immersion in 70% ethanol for 5 min, and then immersed in 10% sodium hypochlorite (NaOCl) for 20 min, followed by 5% sodium hypochlorite shaken periodically for 5 min. They were then rinsed several times with sterile distilled water (SDW).
Table 1
Callogenic response of three explants type of *S. biafrae* on 2, 4-D in dark condition.

| Treatments | Response | Callus colour | Callus type |
|------------|----------|---------------|-------------|
| LMD0       | –        | –             | –           |
| LMD1       | ++       | Cream/Yellow  | Friable     |
| LMD2       | ++       | Green         | Friable     |
| LMD3       | ++       | Cream         | Friable     |
| LMD4       | +++      | Cream         | Friable     |
| NMD0       | –        | –             | –           |
| NMD1       | ++++     | Cream         | Friable     |
| NMD2       | ++++     | Cream         | Compact     |
| NMD3       | ++++     | Cream         | Friable     |
| NMD4       | ++++     | Cream         | Friable     |
| PMD0       | –        | –             | –           |
| PMD1       | –        | –             | –           |
| PMD2       | ++++     | Cream         | Friable     |
| PMD3       | ++       | Cream         | Friable     |
| PMD4       | +        | Cream         | Friable     |

= no response; + = 0–25%, ++ = 26–50%, 51–75%, 76–100%.

Fig. 1. Callus formation in 2,4-Dichlorophenoxyacetic acid by (a.) nodal (b.) petiole and (c.) leaf explants.

Fig. 2. Etiolation formation in plant growth regulator-free medium grown under dark condition.
2.2. In vitro culture of Solanecio biafrae

All the sterilized single node explants were trimmed and cultured on Murashige and Skoog (MS) basal medium [1] supplemented with 3% sucrose. The pH was adjusted to 5.7 using NaOH or HCl before autoclaving at 121 °C for 15 min and adding 0.8% agar. All cultures were maintained at 16 hr photoperiod with 3000 lx light intensity at 25 ± 2 °C.

2.3. Effect of 2,4-D on morphogenesis of S. biafrae

Leaf, nodal and petiole explants were excised from the in vitro grown stock plants maintained on MS basal medium, were cultured on MS medium supplemented with 2, 4-Dichlorophenoxy acetic acid in dark condition to study the morphogenic response of S. biafrae. The treatment with no plant growth regulator was taken as the control and evaluated. Varied concentrations of 2,4-D were added to the media before the pH was adjusted to 5.8 using NaOH or HCl, autoclaved at 121 °C for 15 min and 0.7% agar added. The treatments including control (MS basal medium only) are illustrated in Table 3.

Table 3
Media treatments with different concentrations of PGR used for this study.

| Treatments | Explants | Media |
|------------|----------|-------|
| LMD0       | Leaf     | MS only |
| LMD1       | Leaf     | MS + 0.5 mg/l 2,4-D |
| LMD2       | Leaf     | MS + 1.0 mg/l 2,4-D |
| LMD3       | Leaf     | MS + 1.5 mg/l 2,4-D |
| LMD4       | Leaf     | MS + 2.0 mg/l 2,4-D |
| NMD0       | Nodal    | MS only |
| NMD1       | Nodal    | MS + 0.5 mg/l 2,4-D |
| NMD2       | Nodal    | MS + 1.0 mg/l 2,4-D |
| NMD3       | Nodal    | MS + 1.5 mg/l 2,4-D |
| NMD4       | Nodal    | MS + 2.0 mg/l 2,4-D |
| PMD0       | Petiole  | MS only |
| PMD1       | Petiole  | MS + 0.5 mg/l 2,4-D |
| PMD2       | Petiole  | MS + 1.0 mg/l 2,4-D |
| PMD3       | Petiole  | MS + 1.5 mg/l 2,4-D |
| PMD4       | Petiole  | MS + 2.0 mg/l 2,4-D |

Table 2
Morphogenic response of three explants type of S. biafrae on 2, 4-D in dark condition.

| Treatments | Shoot response | Shoot number | Shoot length (cm) | Root number | Root length | Remarks |
|------------|----------------|--------------|-------------------|-------------|-------------|---------|
| LMD0       | +              | 1            | 5.50 ± 0.50       | 4           | 0.60 ± 0.10 | Etiolated shoot and root formed |
| LMD1       | –              | –            | –                 | –           | –           | No shoot or root formed |
| LMD2       | –              | –            | –                 | –           | –           | No shoot or root formed |
| LMD3       | –              | –            | –                 | –           | –           | No shoot or root formed |
| NMD0       | –              | –            | –                 | –           | –           | No shoot or root formed |
| NMD1       | –              | –            | –                 | –           | –           | No shoot or root formed |
| NMD2       | –              | –            | –                 | –           | –           | No shoot or root formed |
| NMD3       | –              | –            | –                 | –           | –           | No shoot or root formed |
| NMD4       | –              | –            | –                 | –           | –           | No shoot or root formed |
| PMD0       | –              | –            | –                 | –           | –           | No shoot or root formed |
| PMD1       | –              | –            | –                 | –           | –           | No shoot or root formed |
| PMD2       | –              | –            | –                 | –           | –           | No shoot or root formed |
| PMD3       | –              | –            | –                 | –           | –           | No shoot or root formed |
| PMD4       | –              | –            | –                 | –           | –           | No shoot or root formed |

2.2. In vitro culture of Solanecio biafrae

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Table 3. The effect of adding no plant growth regulator was taken as the control and evaluated. A total of 15 treatments were assessed for the plant. For each treatment, a minimum of 10 cultures were raised. The cultures were examined periodically and visual observation made on the morphological changes.

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Transparency document. Supporting information

Transparency document associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2018.07.029.

References

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