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UNDIFFERENTIATED CELLS OF *GARDENIA JASMINOIDES* AS A POTENTIAL SUSTAINABLE SOURCE OF FOOD INGREDIENTS

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INTRODUCTION & AIM

CELLULAR AGRICULTURE

In vitro production of plant biomass under controlled conditions, reducing environmental impact and minimizing dependence on climate and geography.

GARDENIA JASMINOIDES

Widely distributed species with a history of medicinal use and a rich phytochemical profile, including flavonoids, phenolic acids, and iridoids.

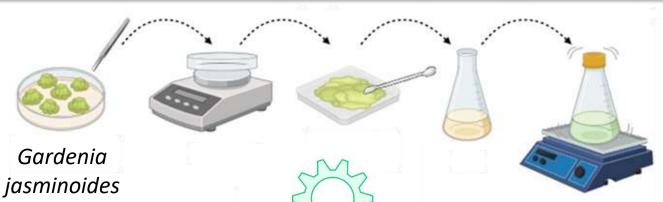
IN VITRO BIOMASS PRODUCTION

Source of nutrients and valuable phytochemicals with antioxidant, anti-inflammatory and neuroprotective properties.

AIM

Explore *in vitro* cultures of *Gardenia jasminoides* as a potential sustainable source of functional food ingredients

METHODS



2) Growth kinetics based on dry weight, fresh weight, and cell sedimentation volume¹

4) Total phenolic compounds quantification (Folin-Ciocalteu method) ²

6) Water activity (a_w) determination

1) Cell suspension culture establishment

3) Biomass freeze-drying



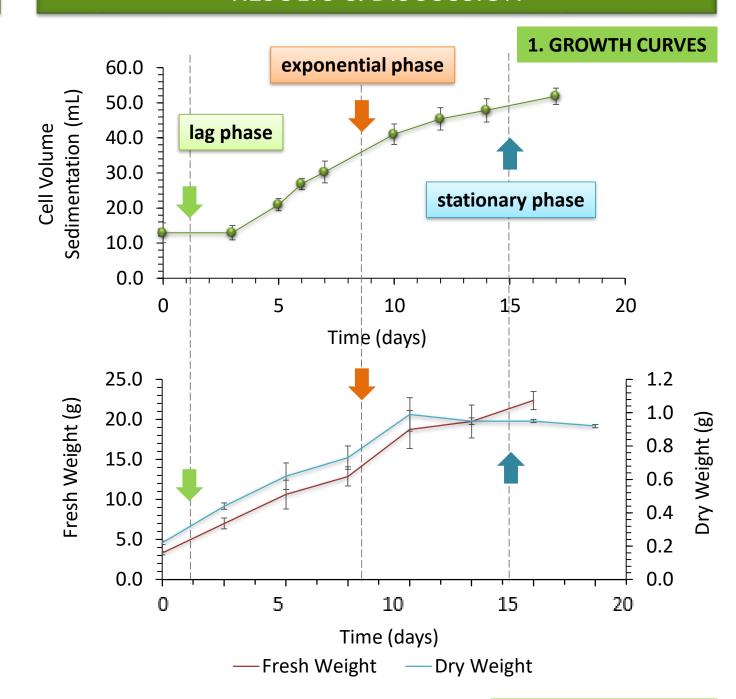
5) Antioxidant capacity determination (ABTS method)²

7) Proximate analysis: moisture, protein, fat, crude fiber, ash and carbohydrate content³

REFERENCES

- **1**-Mustafa, N. R. et al. (2011). *Nature Protocols*, 6(6), 715–742.
- 2-Martinez et al. (2023). Plant Foods for Human Nutrition, 78(4), 742-747.
- 3-Lee, J. et al. (2005). Journal of AOAC international, 88(5), 1269-1278.

RESULTS & DISCUSSION



2. PROXIMAL ANALYSIS

Fat (not shown; 0.1 %)

Moisture (8.0 %)

Carbohydrate (45.5 %)

Protein (24.9 %)

Crude Fiber (8.5 %)

Ash (9.0 %)

3. BIOMASS YIELD, PHENOLICS & WATER ACTIVITY

- ✓ Maximum biomass yield (g fresh weight/L): 265.0
- ✓ Maximum biomass yield (g dry weight/L): 14.5
- ✓ <u>Duplication time</u> (days): 8.4
- ✓ Total phenolic content (mg GAE/g fresh weight): 6.1 ± 1.4
- Antioxidant capacity (μ mol TE/g): 18.20 ± 0.59
- ✓ Water activity (a_w) at 25 °C : 0.37

CONCLUSION

The results support the use of *G. jasminoides* undifferentiated cells as a sustainable, bioactive, and nutritionally valuable ingredient for functional food applications.

FUTURE WORK

Functional properties of biomass are essential to assess its impact on foods. Meticulous food safety studies must also be conducted, ensuring its safety for human consumption.