Foods 2025 Conference
The 6th International Electronic Conference on Foods
28–30 October 2025 | Online
MDPI

Modeling the Effects of Pretreatment and Solar Drying on Bitter Leaf's (Vernonia amygdalina) Chromatic Profile to Improve Its Market Value

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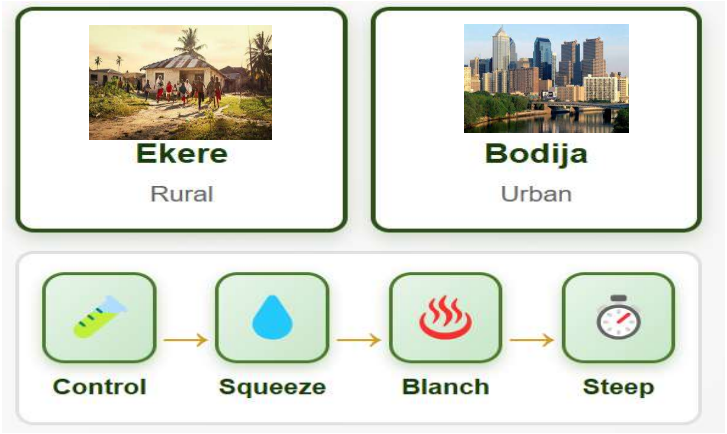
INTRODUCTION & AIM

- Bitter leaf is a nutritious African vegetable valued for its deep green colour
- Colour degradation during solar drying reduces market appeal

Aim: Model the effect of pretreatments and leaf source on chromatic changes

METHOD



- Models: Zero-Order, First-Order, Fractional Conversion, Arrhenius
- CIE L*a*b* colour monitoring
- Nonlinear regression (R^2, SSE)

RESULTS & DISCUSSION

COLOUR CHANGES DURING PROCESSING

Control Samples
Higher L* (Lightness)
Ekere: 31.45, Bodija: 25.30

Blanched Samples
Higher a* (Redness)
17.33, 18.64

Solar Drying Effects
Lightness fluctuation
Yellowness increase

Urban Samples
Superior model fit
(Bodija)

Squeeze-washed (rural): ΔE = 70.13
Most significant colour change ($p<0.05$)

CONCLUSION

CONCLUSION: To Preserve Export-Quality Green Colour

- ✓ Source leaves from urban farms (Bodija) for better chromatic stability
- ✓ Avoid blanching and squeeze-washing pretreatments
- ✓ Use minimal pretreatment for optimal colour retention
- ✓ Zero-Order kinetics can predict colour changes during drying

FUTURE WORK / REFERENCES

Controlled drying technologies | Predictive quality models

Find references in QR code