

# Freeze-dried Muscadine Fruit



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# The muscadine

## *Muscadinia rotundifolia*

- Extremely vigorous
- Disease tolerant compared to *Vinifera* grapes
- Well-adapted to the southeastern USA
- It lacks cold hardiness

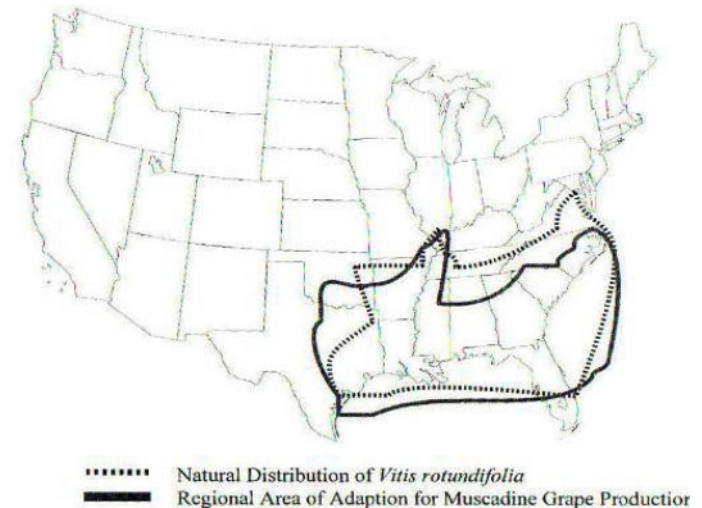


Fig. 1-2. Distribution of wild and cultivated muscadines.

Credit: Patrick Conner

# The muscadine

- 5,000 acres in Southeastern US
- Main grape in Florida
- Resistant to pest and diseases
- Healthy: Flavonoids, polyphenols, vitamins, fiber, etc.
- Anti-inflammatory and anticancer properties, cardiovascular health, strengthening of immune system



# Varieties and germplasms

- Variety for juice and wine production
- Fresh market variety



# Harvesting for fresh market/packing

1-quart containers: ~\$ 4.00 -per pack retail: Yield = ~6,5 t / ha



# Harvesting for juice



Vineyardkeeper

- Juice and vine sweeter than *vinifera*
- Yield= ~500 Li/t



<https://www.lakeridgewinery.com>

# Muscadine products



Credit: Patrick Conner

# Muscadine production in FL










# Thick peel and seeds

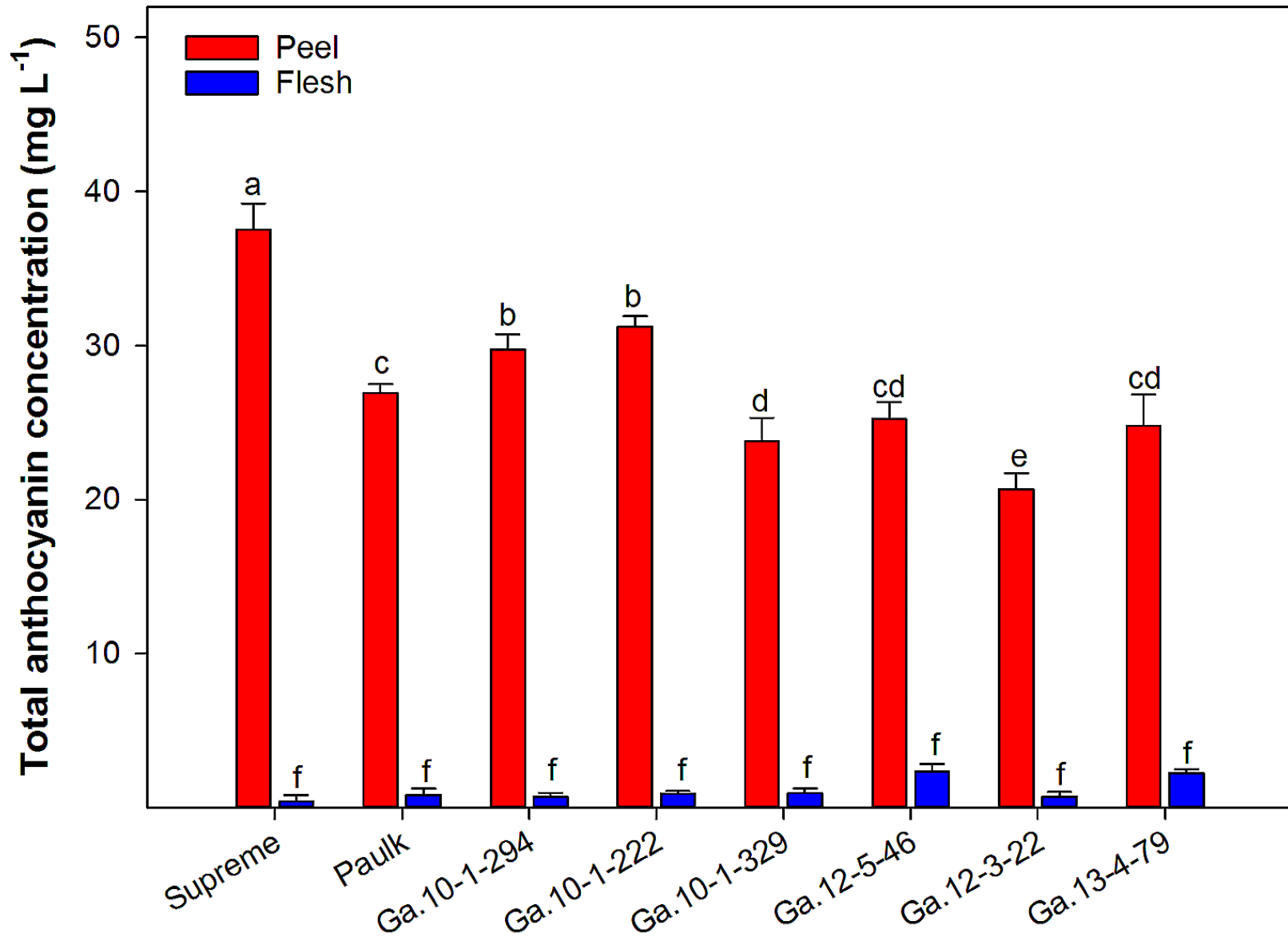


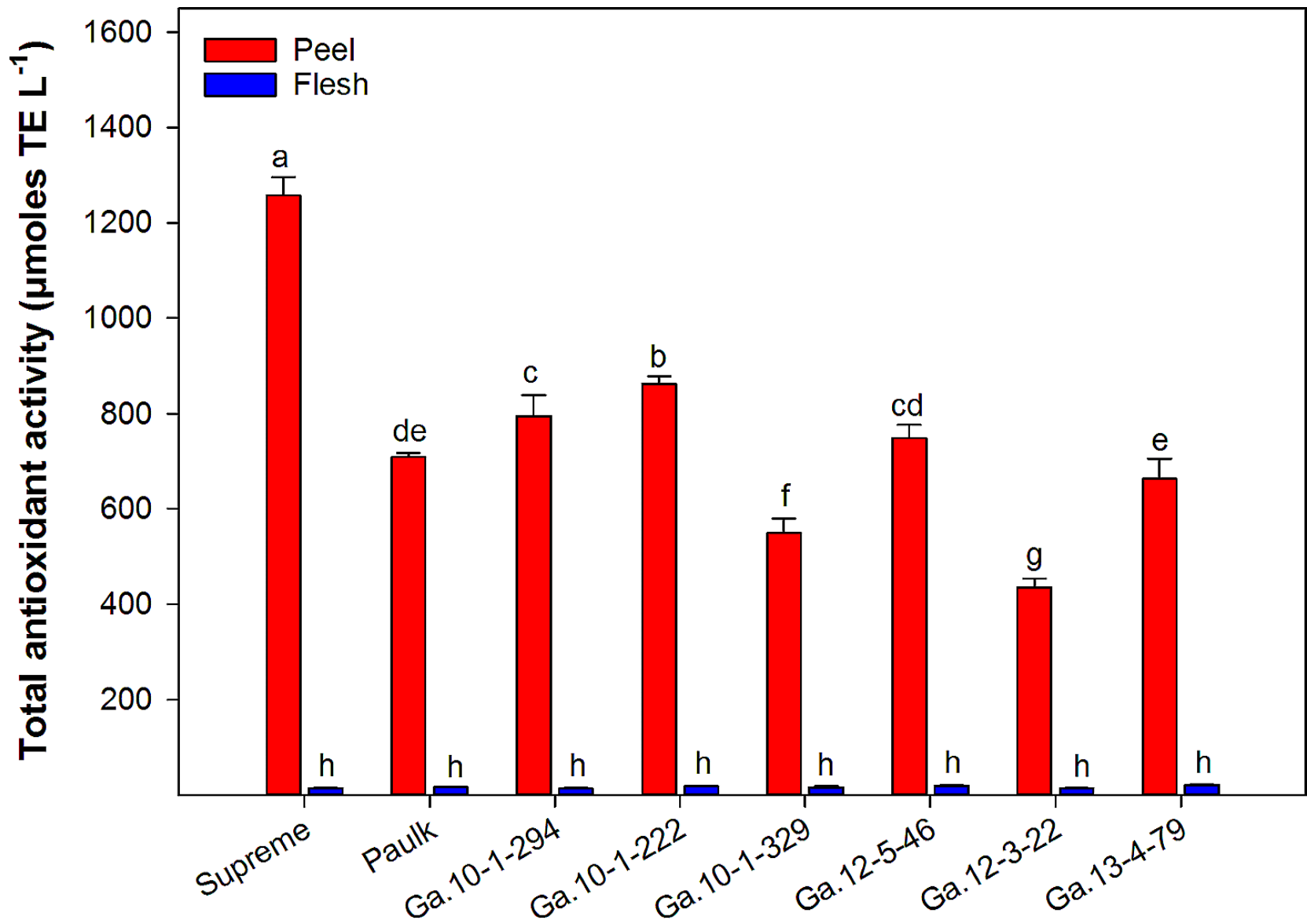


## Nutritional value of peel and flesh of muscadine genotypes: a comparative study on bioactive compounds, total antioxidant activity, and chemical attributes

Fariborz Habibi<sup>1</sup> · Cătălin Voiniciuc<sup>1</sup> · Patrick J. Conner<sup>2</sup> · Doosan Shin<sup>1</sup> · Jeongim Kim<sup>1</sup> · Jeffrey K. Brecht<sup>1</sup> · Ali Sarkhosh<sup>1</sup> 







# Dried fruit

- Reduce perishability
- Extend fruit shelf-life
- Easier commercialization
- Retain original flavor and aroma



# Dried fruit





# Freeze drying



# Freeze drying



# Freeze drying





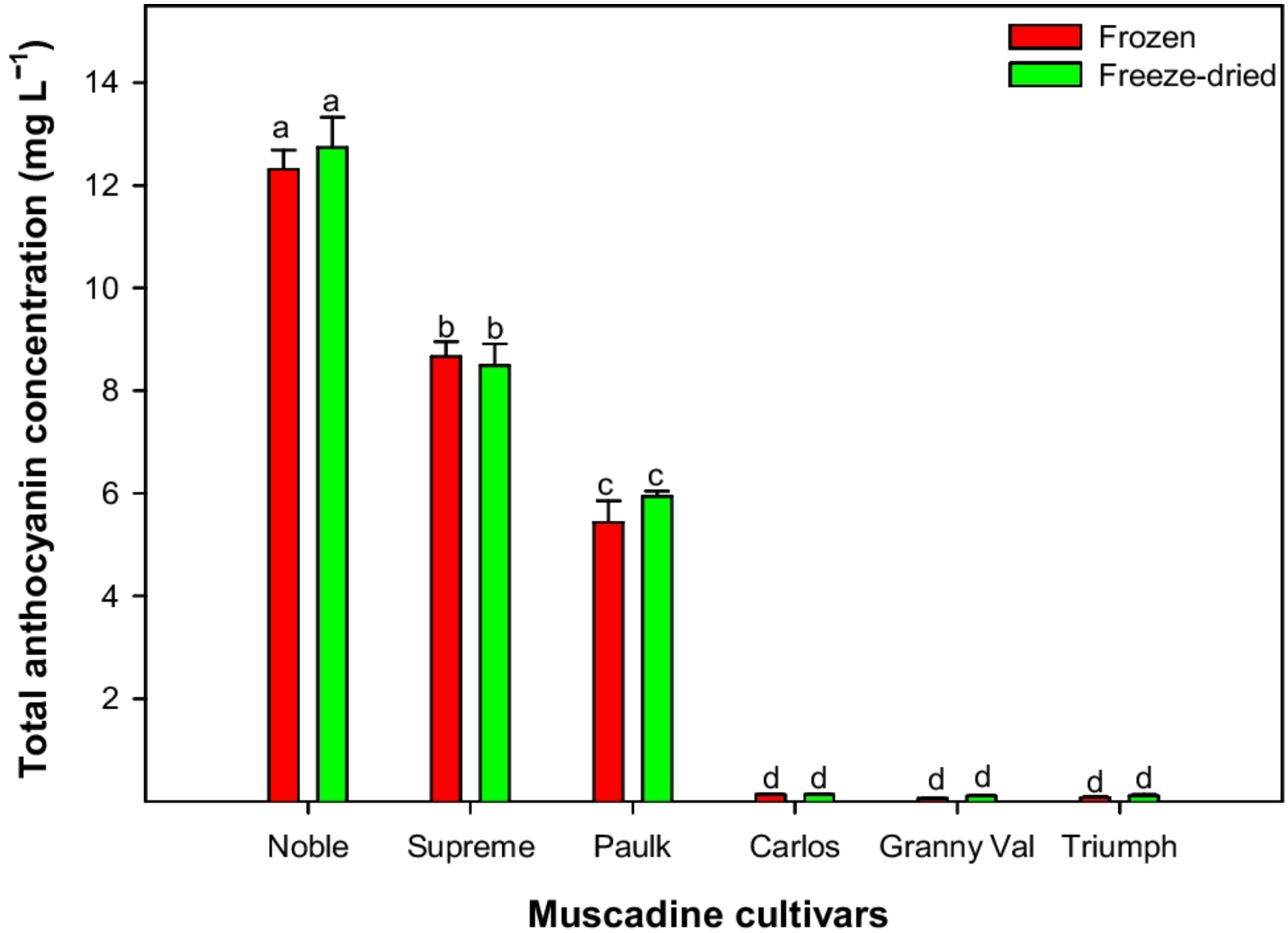
# Freeze-Drying Does Not Affect Bioactive Compound Contents and Antioxidant Activity of Muscadine Fruit

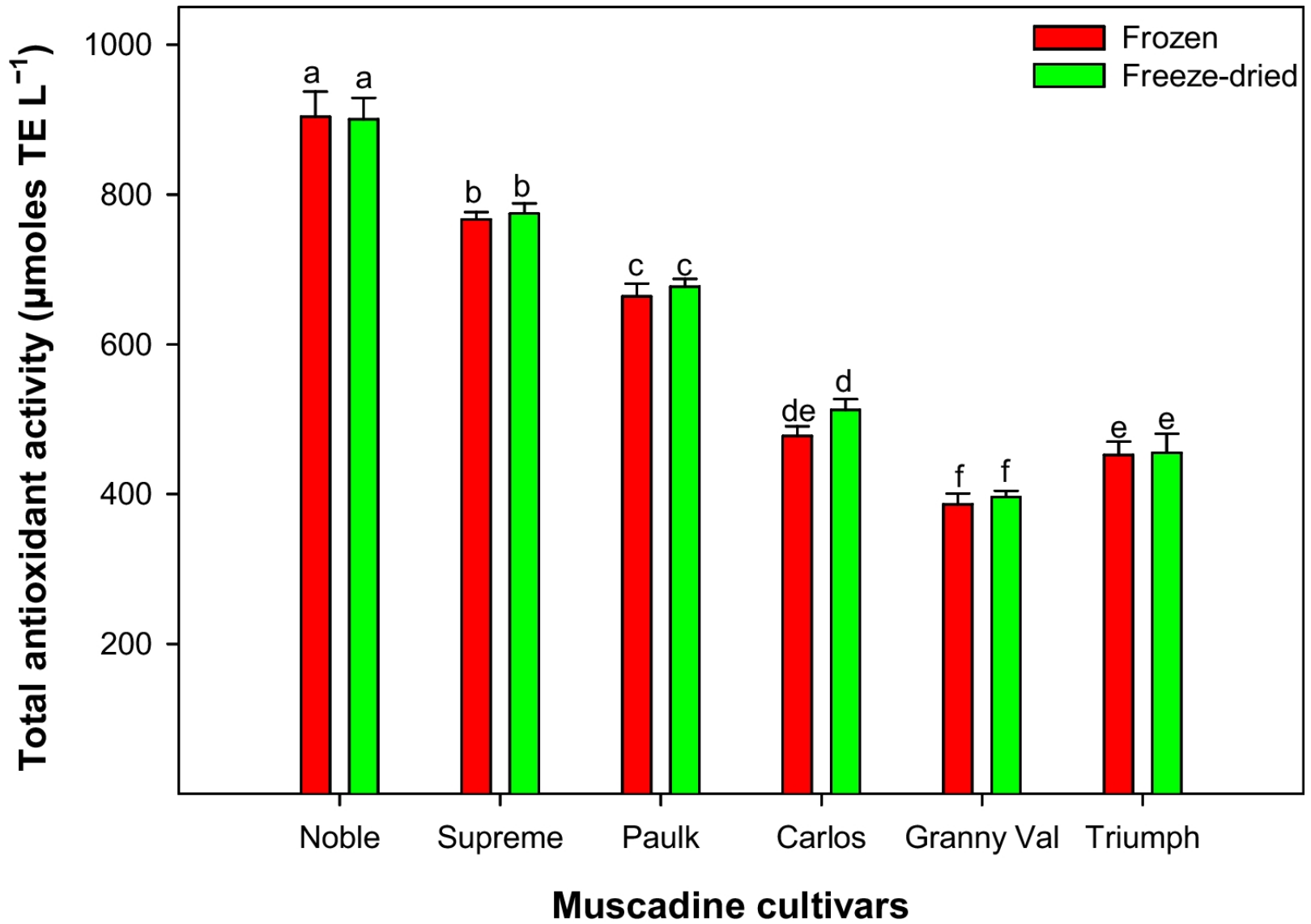
Ali Sarkhosh<sup>1</sup> · Fariborz Habibi<sup>1</sup> · Steven A. Sargent<sup>1</sup> · Jeffrey K. Brecht<sup>1</sup>

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# Freeze-dried muscadine

- Preservation of the high levels of beneficial phytochemicals and antioxidants
- Retain the primary structure of the fruit
- Low temperature: Vitamins and minerals, flavor and aroma
- Round year availability
- Opportunity for food industry, high-value products, ready to eat
- Consider high initial investment
- Research required



# For more information



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HS1468

<https://doi.org/10.32473/edis-HS1468-2023>

## Freeze-Dried Muscadine Grape: a New Product for Health-Conscious Consumers and the Food Industry<sup>1</sup>

Ali Sarkhosh, Fariborz Habibi, and Steven A. Sargent<sup>2</sup>



Food and Bioprocess Technology  
<https://doi.org/10.1007/s11947-023-03277-w>

RESEARCH



## Freeze-Drying Does Not Affect Bioactive Compound Contents and Antioxidant Activity of Muscadine Fruit

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ORIGINAL PAPER



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UF Fruit Crop Lab

UF Post-harvest Labs



Fruits and vegetables for Florida and beyond



# Thank You!

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*"I cannot do all the good that the world needs. But the world needs all the good that I can do."-Jana Stanfield*

