

# EFFECT OF FERTILIZATION VIA NUTRIENT SOLUTION ON THE NUTRITIONAL PROFILE AND CHEMICAL COMPOSITION OF *CHICORIUM SPINOSUM* L.

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## 1<sup>st</sup> Research Meeting on Biochemistry

## Introduction



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The availability of healthy and functional food is a worldwide concern to meet the increasing demands of consumers.



The concentration of fertilizing via nutrient solution can affect the production and quality of the nutritional value of leafy vegetables.



*Chicorium spinosum* L. is a wild edible plant that occurs in different Mediterranean climates, which has already been described and correlated with the prevention of chronic diseases and disorders [1–3].



## Materials and methods

7 samples of *C. spinosum*  
with different nutrient solution

Different ratios of nitrogen, phosphorus, and potassium.



Nutritional profile

Crude protein, total dietary fiber, total fat, ash and carbohydrates.

**Energy** (kcal per 100 g) = 9x (g fat) +  
4x (g protein + g carbohydrate) +  
2x (g total dietary fiber)

Chemical composition

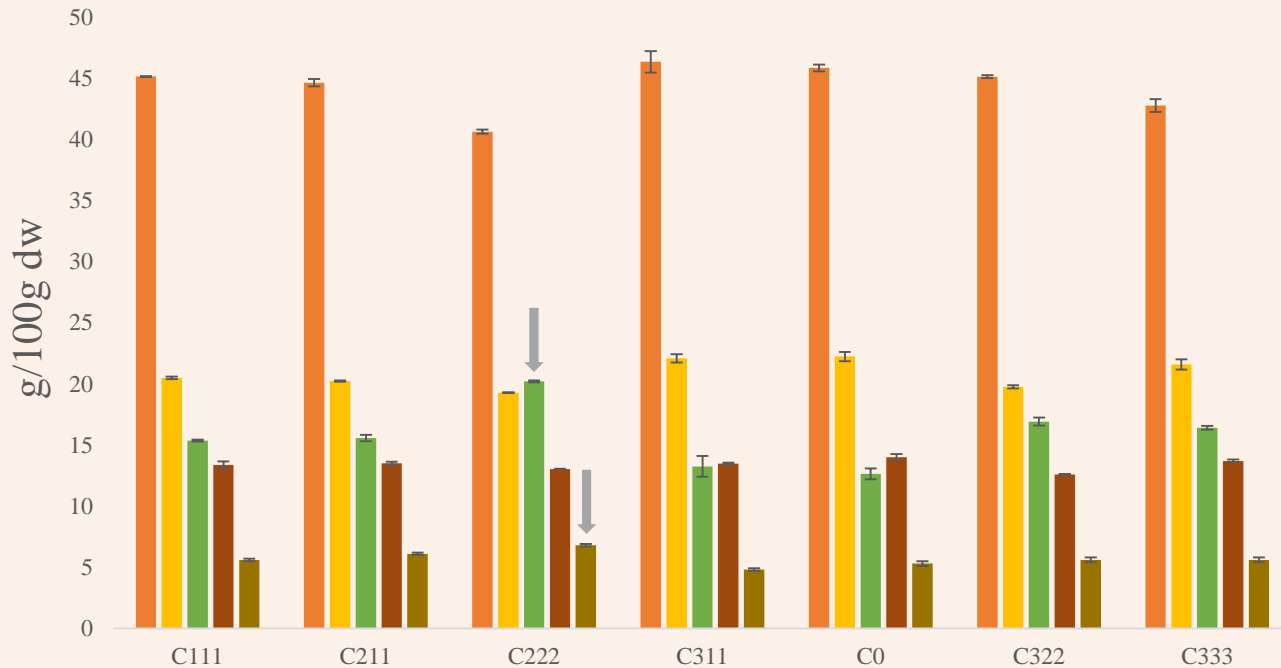
Sugars free (HPLC-RI), fatty acids (GC-FID) and organic acids (UFLC-PDA).





## Results

### Nutritional profile



Samples of *Cichorium spinosum* fertigated with different nutrient solutions (N:P:K)

■ Total fiber dietary ■ Crude protein ■ Carbohydrates ■ Ash ■ Fat

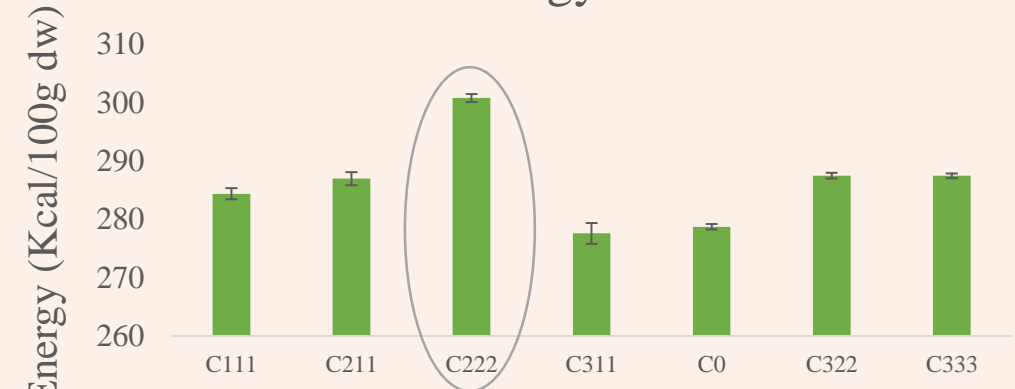


**200:200:200 N:P:K**

The highest amounts of:

Total fat, carbohydrates and energy.

### Energy



Samples of *C. spinosum* with different nutrient solutions (N:P:K)



## Results

### ☐ Sugars free

Glucose > sucrose > fructose

### ☐ Fatty acids

PUFA > SFA > MUFA

### ☐ Organic acids

↑ Quinic acid

↓ Oxalic and malic acids



The highest amounts of:

**300:100:100 N:P:K**

crude protein,  
total dietary fiber,  
organic acids.



**300:200:200 N:P:K**

Sugars and fatty acids,  
mainly linoleic acid





## Conclusions

The results demonstrated that it is possible by selecting the proper nutrient solution to improve the nutritional profile and functional compounds, thus enabling the cultivation of *C. spinosum* in controlled cropping systems, increasing yield and product availability, and making it available to a larger number of consumers.

## References

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# THANK YOU!

