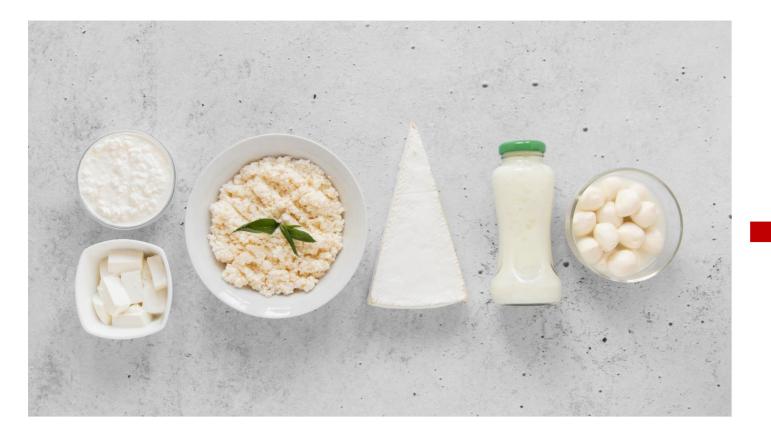
# Antinutritional factors in flours and protein concentrates of different varieties of chickpeas



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# Introduction



Development of new plantbased food products



Increase the use of plant proteins from different sources

Phytates

Tannins

Trypsin inhibitors

Antinutrients

Decrease the bioavailability of amino acids and minerals

Negative impact

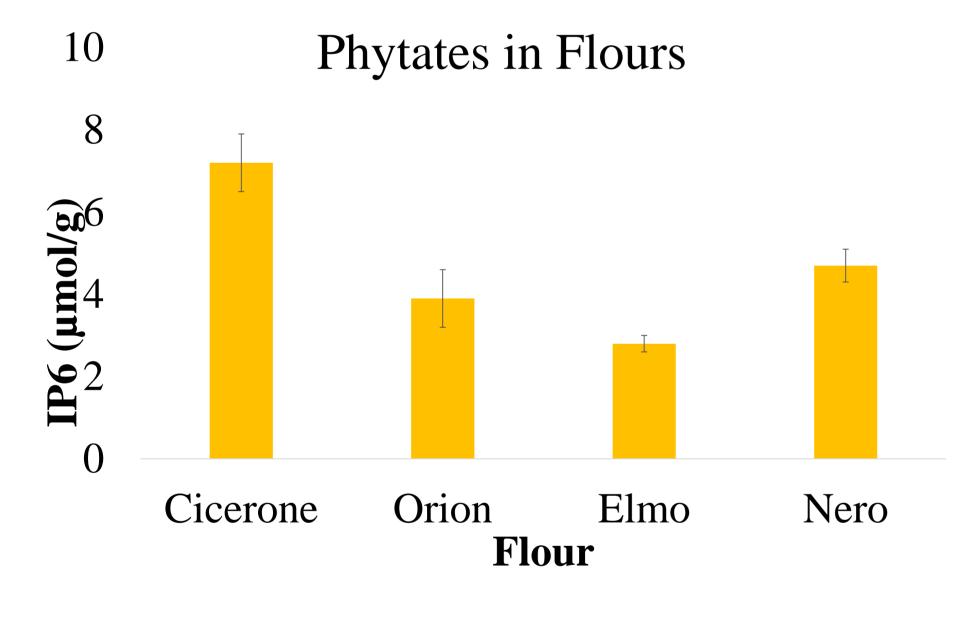
# Objectives

We evaluated the presence of antinutrients such as phytates, tannins and trypsin inhibitors (TI) in flours and protein concentrates (PC) of four varieties of chickpeas.

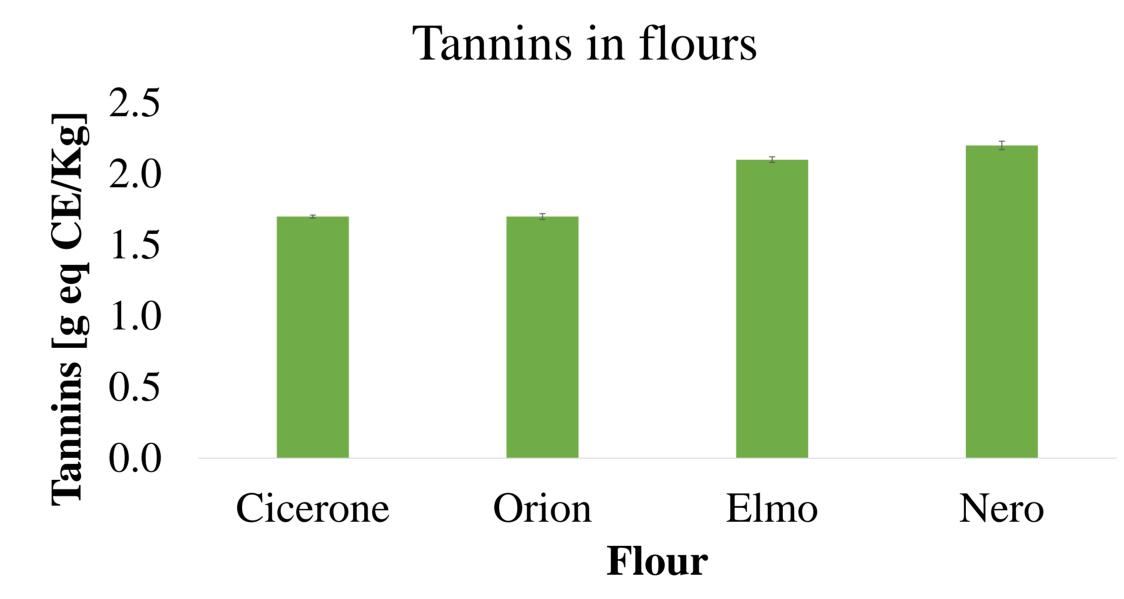
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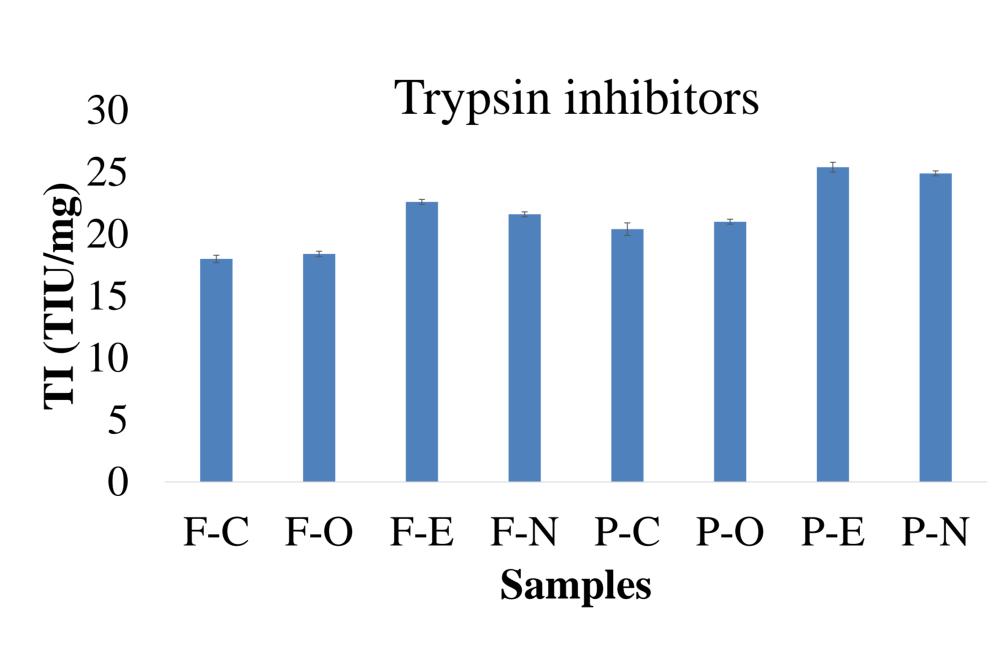
### Results

30



Phytates in proteins concentrates

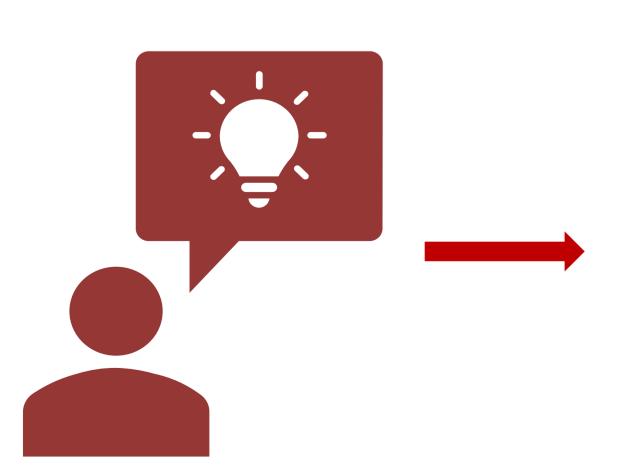




- ✓ Phytates: IP5, IP4 and IP3 were not detected in the flours.
- ✓ IP3 was not present in the protein concentrates.
- ✓ Tannins were found only in the chickpeas flours.
- ✓ The protein extraction method applied did not co-extract tannins.
- ✓ The protein extraction method increased the amount of trypsin inhibitor in the final samples.

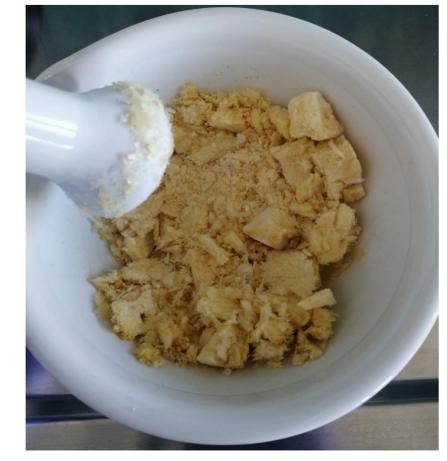
# Conclusions

Cicerone



Orion

Future studies



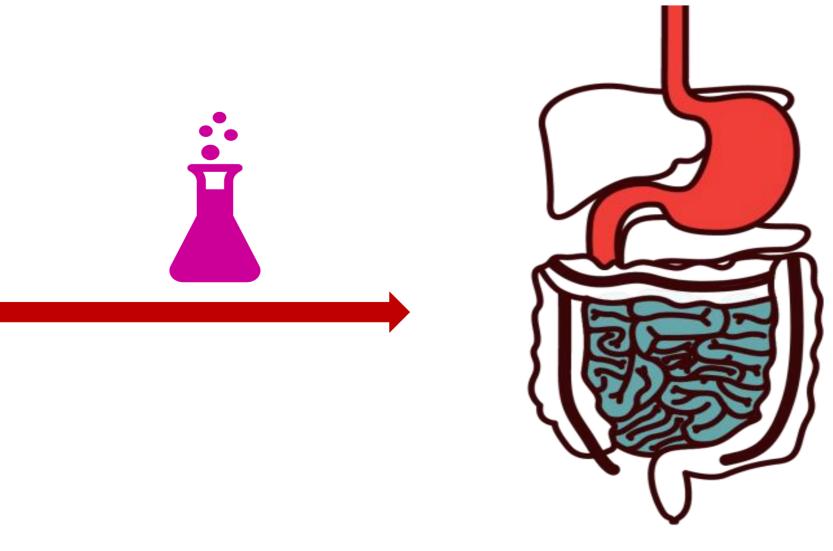
■ IP6

■ IP5

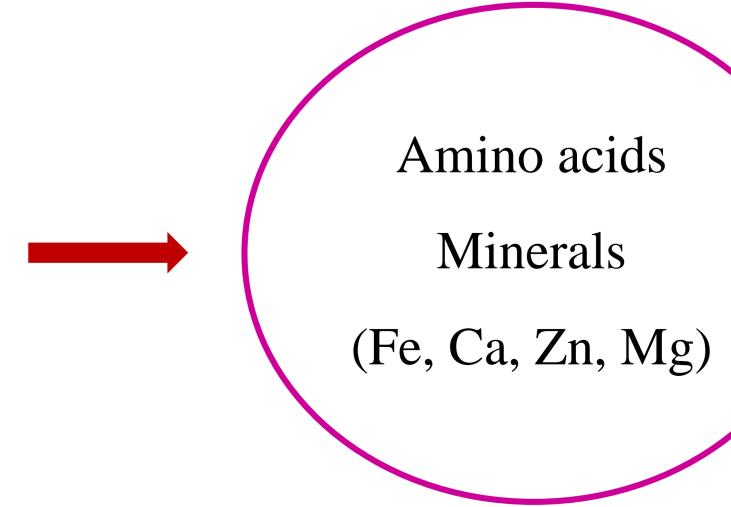
**■** IP4

Nero

Protein concentrate



In vitro digestion



Bioaccessibility

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Elmo

**Protein concentrates**