

POWER PROTEINS: UNLOCKING THE POTENTIAL OF CEREALS & PULSES

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Keywords

cereals, pulses, chickpeas, proteins, plant-based diet



INTRODUCTION: Cereals and pulses are staple food sources worldwide, offering a rich and complementary profile of essential amino acids and making them valuable for addressing global nutritional challenges. Cereals, such as quinoa, amaranth, and teff, along with pulses, such as lentils, chickpeas, and beans, provide diverse protein options that can meet the nutritional needs of various dietary preferences. Moreover, the cultivation of cereals and pulses requires fewer resources and has a lower environmental impact than animal agriculture, aligning with global efforts toward sustainable food production.

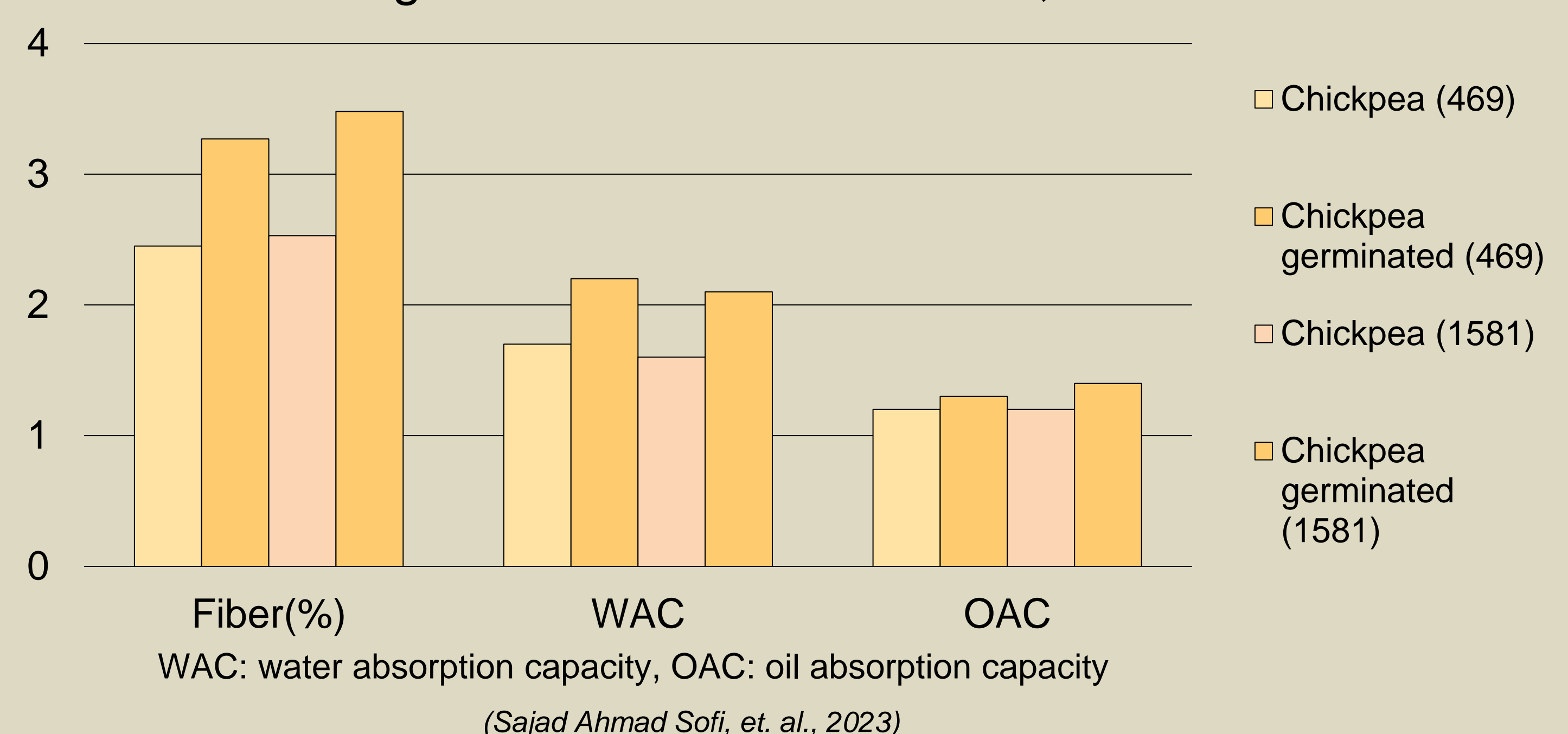
Objective: This study explored the potential of these plant-based proteins to enhance food security, promote sustainability, and improve human health.

Raw material and germination analyses

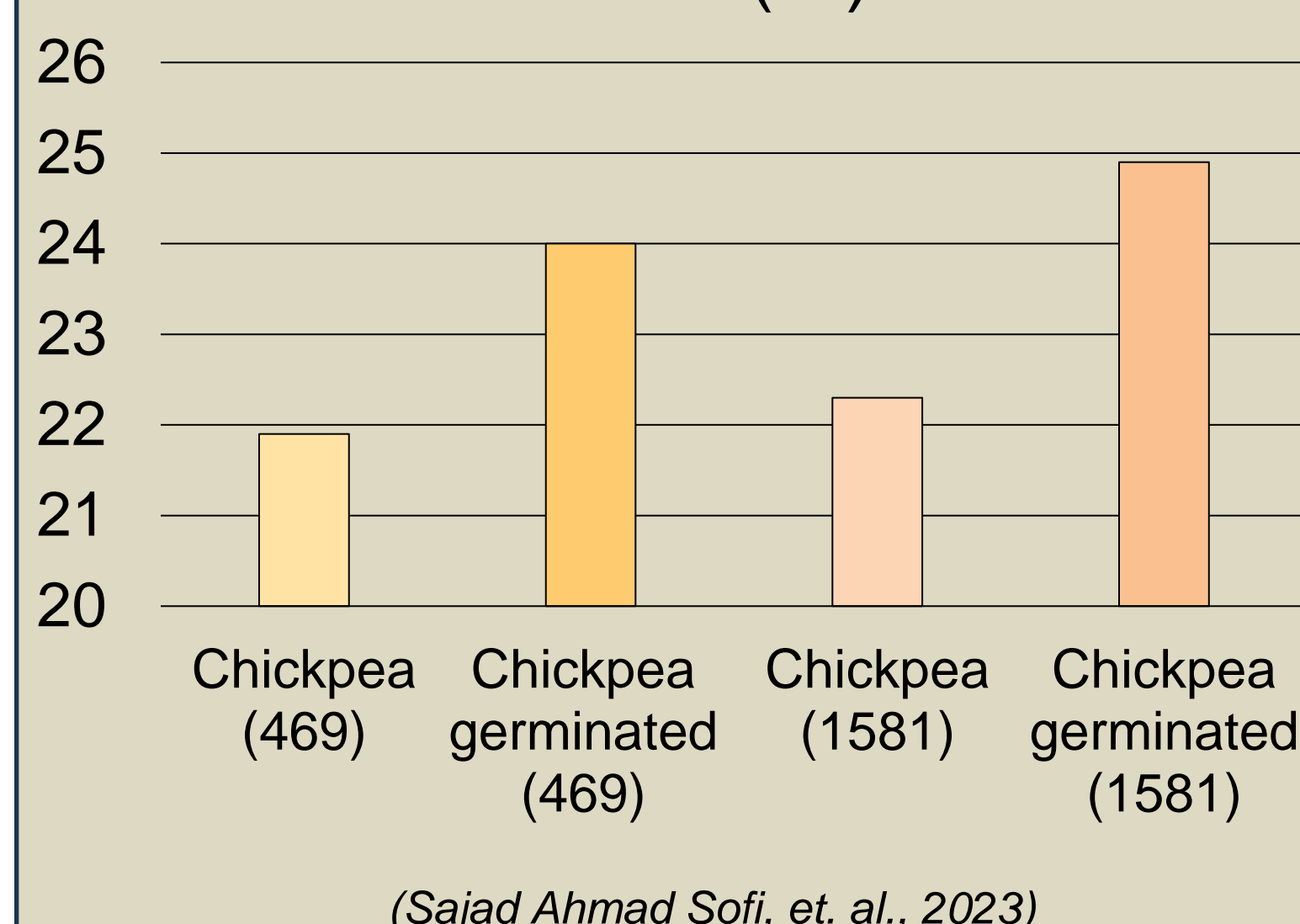
1. Physical and chemical
 - moisture (%)
 - protein (%)
 - lipids (%)
 - ash (%)
 - fiber (%)
2. Functional proprieties
 - solubility
 - water-holding capacity
 - emulsifying
 - gelling
3. Microbiological
 - yeasts and molds (cfu/g)
 - Enterobacteriaceae* (cfu/g)

Results and comparative analysis:

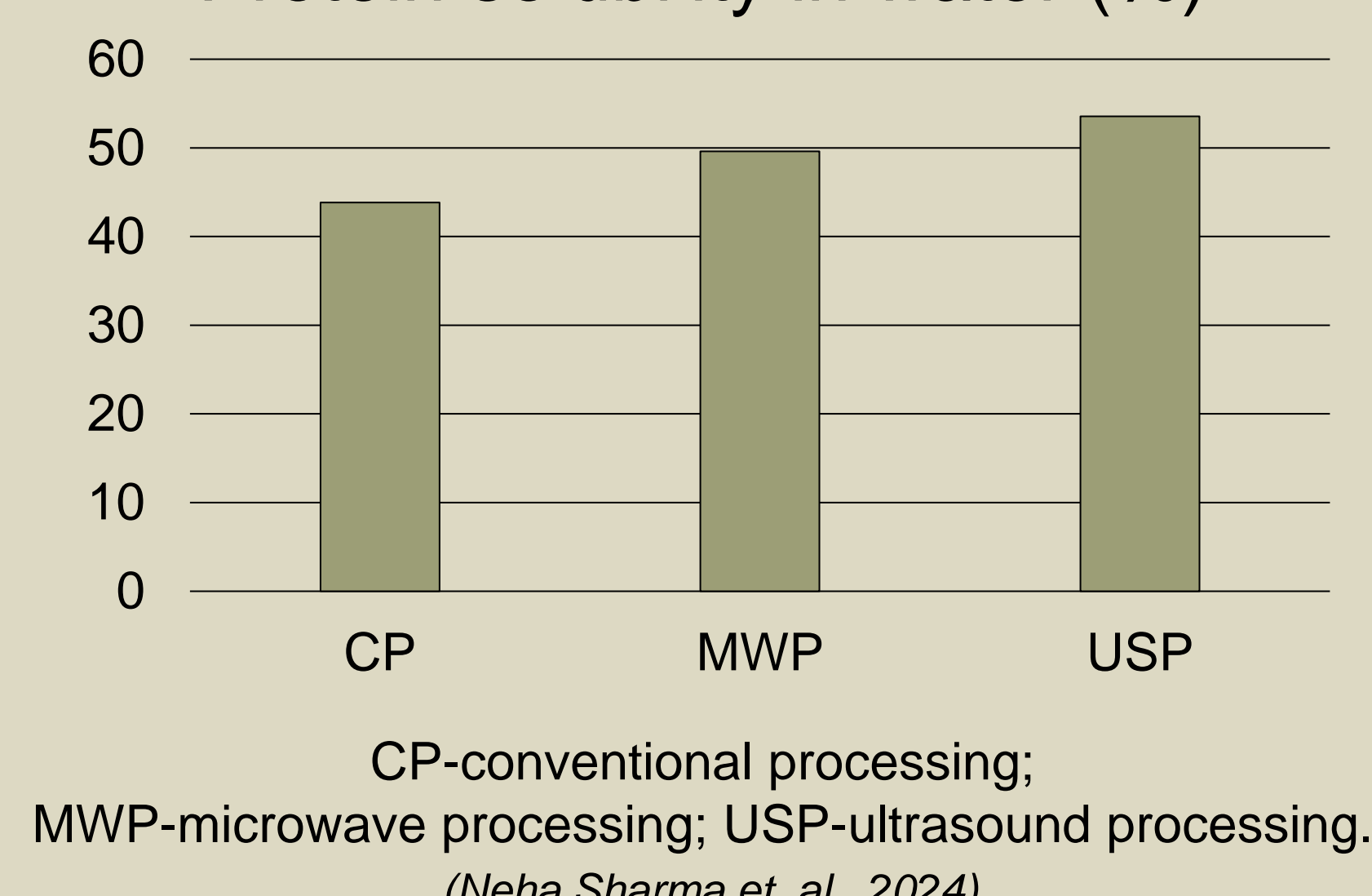
Influence of germination on fiber content, WAC and OAC



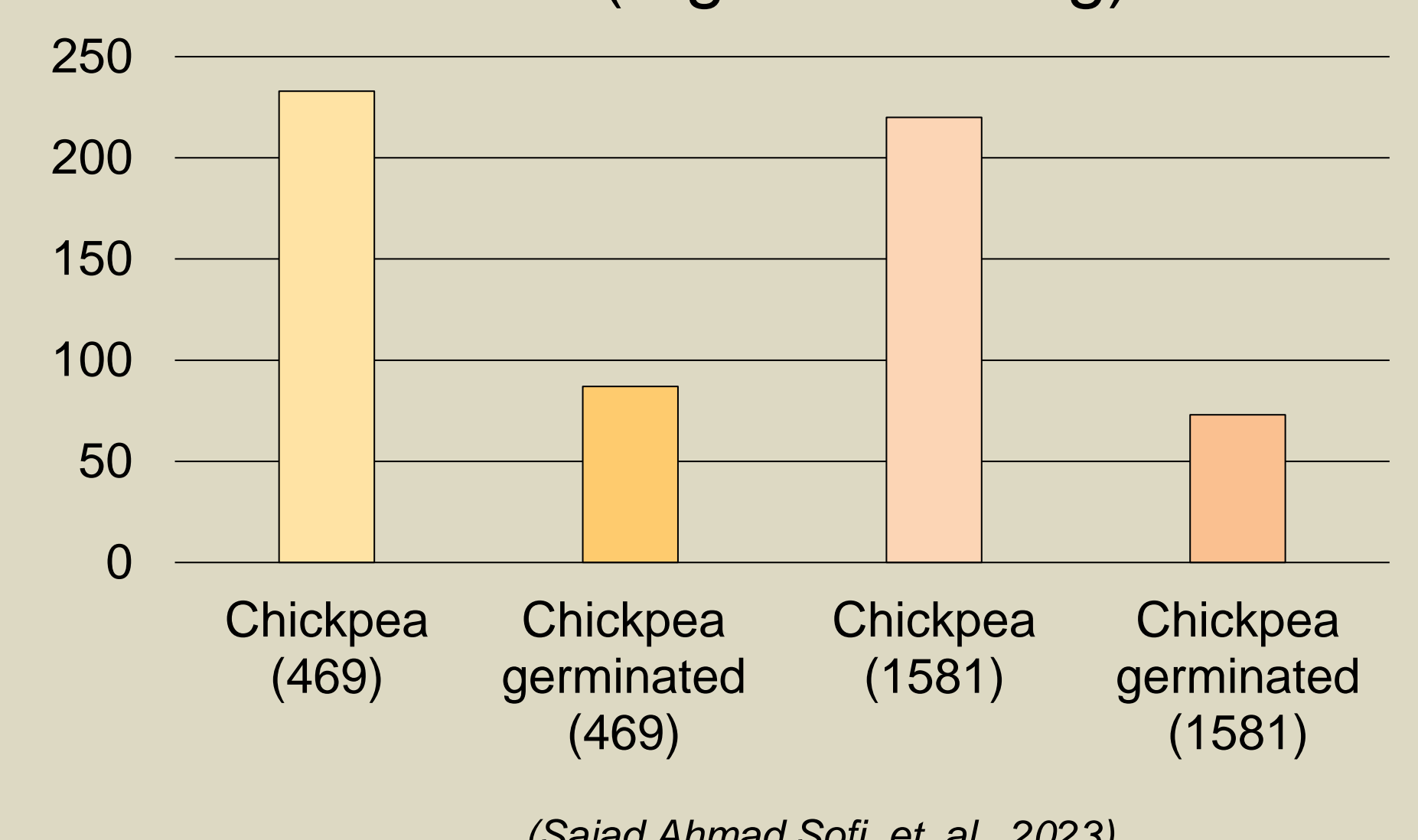
Protein (%)



Protein solubility in water (%)



Tannins (mg TAE /100 g)



Discussions and conclusion: Pretreatment methods, such as soaking and germination, have been shown to be effective in reducing antinutritional factors (Tannins mg TAE /100g) and improving protein solubility, fiber, water, and oil absorption capacity (Sajad Ahmad Sofi, et. al., 2023). For chickpea by-product resulting from juice extraction, microwave and ultrasonic processing methods demonstrated notable improvements in extraction yield and protein content compared to conventional processing (Neha Sharma, et. al., 2024).

References: Sajad Ahmad Sofi, Shafiya Rafiq, Jagmohan Singh, Shabir Ahmad Mir, Sushil Sharma, Parshant Bakshi, David Julian McClements, Amin Mousavi Khaneghah, B.N. Dar, 2023. Impact of germination on structural, physicochemical, techno-functional, and digestion properties of desi chickpea (*Cicer arietinum* L.) flour. *Food Chemistry*, Volume 405, Part B, 135011.
Neha S., Nushrat Y., Valérie O., 2024. Physicochemical, microstructural, and functional properties of *Cicer arietinum* okara flour—a chickpea beverage by-product. *International Journal of Food Science and Technology*, Volume 59, Issue 11, Pages 8697–8707, <https://doi.org/10.1111/ijfs.17146>