

Antidiabetic properties of nano encapsulated *Coccinia grandis* extract incorporated breakfast porridge.

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Introduction

Diabetes Mellitus is a cluster of metabolic diseases, characterized by hyperglycemia and the usage of phytotherapeutics to manage diabetes is becoming a trend.

***Coccinia grandis* (Ivy gourd)** is a medicinal plant especially used to treat diabetes mellitus.

It has strong antioxidant activity, reducing power ability, free radical scavenging activity, metal chelating ability, and the ability to stimulate insulin secretion and is effective for diabetic dyslipidemia (Tamilselvan et al., 2011).

But the effectiveness of these bioactive compounds can be altered with the processing conditions and some GI tract enzymes (Shishir et al., 2018).

Nanoencapsulation is one of the best methods which can prevent these alterations.

Nanoencapsulation,

- ▶ allows control release of drugs
- ▶ increase the bioactivity of the drug
- ▶ rapid adsorption
- ▶ avoid enzymatic degradation
- ▶ maintain thermal stability



Why porridge cube?

- ▶ Convenience & customer attraction
- ▶ Increase the shelf life
- ▶ Save space and packaging cost

Methodology

Phase I

- ▶ A systematic Literature review on "**Antidiabetic properties and antioxidants of *Coccinia spp* leaves**"

Phase II

- ▶ Preparation of Instant porridge cube.
- ▶ Check the antidiabetic effect of the developed porridge cube by analyzing the postprandial blood sugar levels.

Phase III

- ▶ Nanoencapsulation of *C. grandis* extract
- ▶ Compare the antidiabetic effects at In-vitro digestion phases between nano encapsulated and non-encapsulated

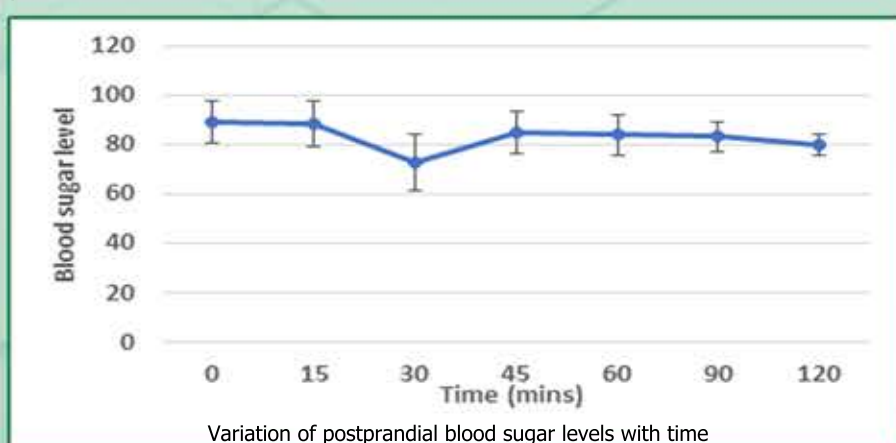
Results

Phase I

Coccinia spp are rich in bioactive compounds such as Quercetin hydrate, Gallic acid, Caffeic acid, Ellagic acid, etc.

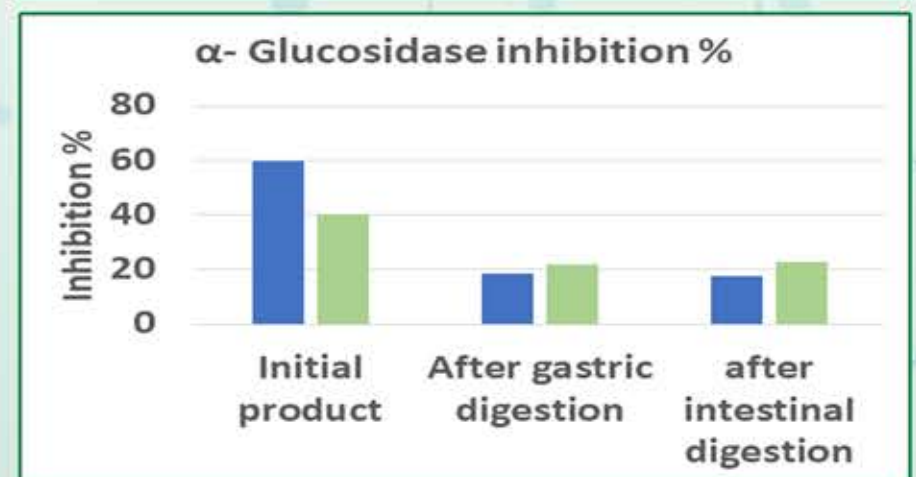
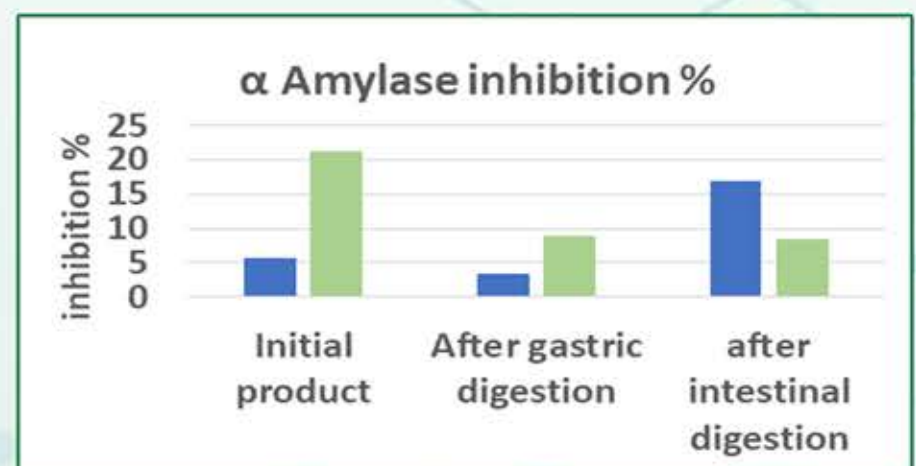
Average Total Phenolic content: 63.06 mg/g GAE

Phase II



Coccinia grandis

Phase III



■ non-encapsulated porridge
■ Nano encapsulated porridge

Conclusion

- ▶ Leaves of *Coccinia spp* are rich in bioactive compounds and it has a strong antidiabetic & antioxidant properties.
- ▶ This valuable medicinal plant has higher potential to incorporate with different kind of food.
- ▶ Nanoencapsulation preserves the bioactive compounds enhance

References

- Tamilselvan, N. et al. (2011) 'Pharmacognosy of *Coccinia grandis*: A review', Asian Pacific Journal of Tropical Biomedicine, 1(SUPPL. 2). doi: 10.1016/S2221-1691(11)60176-7.
- SE, A. et al. (2010) 'Evaluation of the polyphenol content and antioxidant properties of methanol extracts of the leaves, stem, and root barks of *Moringa oleifera* Lam', Journal of medicinal food, 13(3), pp. 710-716. doi: 10.1089/JMF.2009.0057.