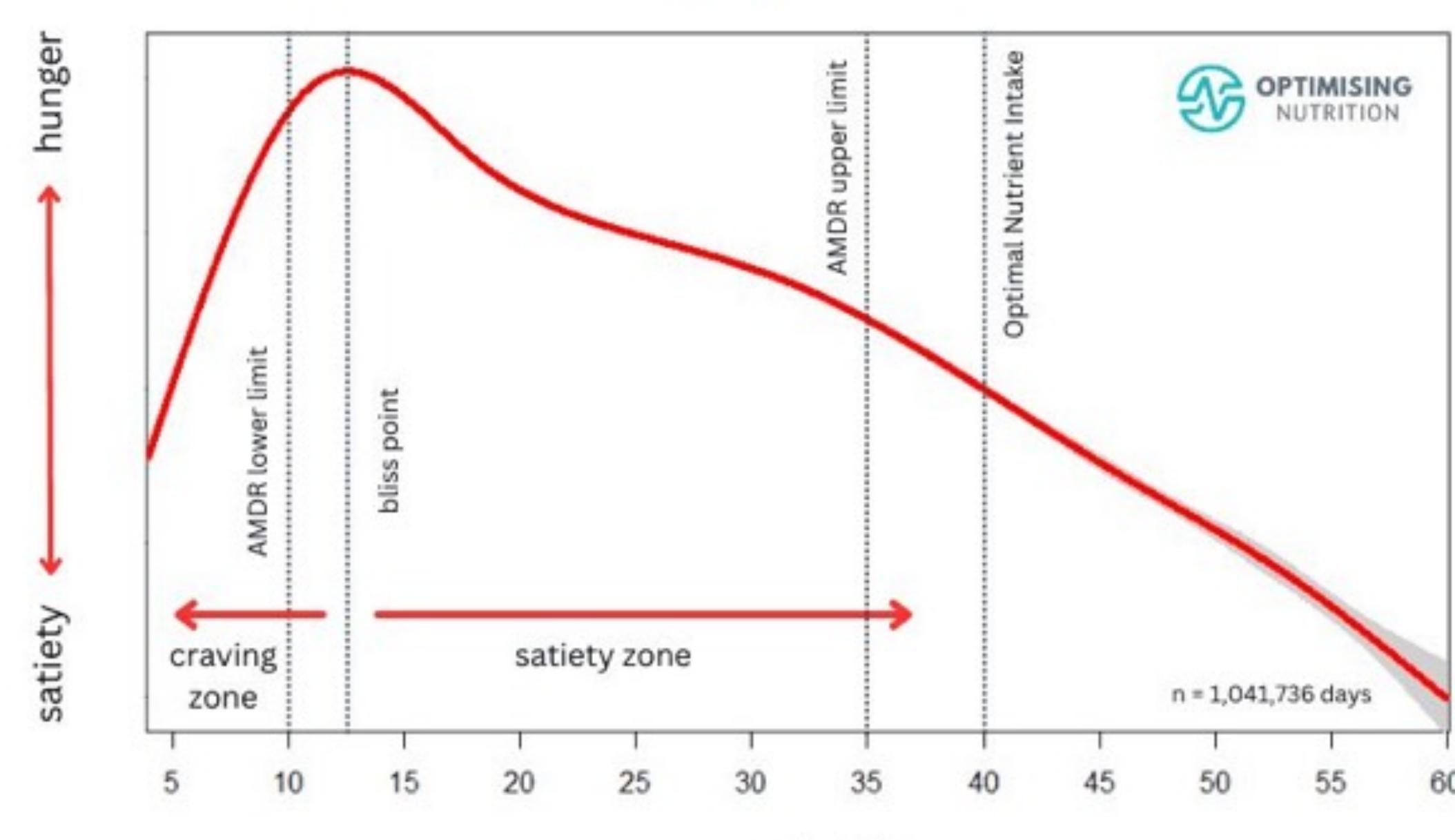


# Impact of Protein Powder Processing on Satiety and Postprandial Glycemic Response

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## Introduction

- Proteins enhance satiety by slowing digestion, which helps control appetite and supports weight management.
- Protein-rich meals reduce glycemic spikes by slowing carbohydrate absorption, benefiting metabolic health.



## Methodology

- Formulate a savory patty using various protein forms (Soy powder, TVP, HMMA) while maintaining consistent carbohydrates, fats, and other elements to achieve optimal texture, taste, and appearance.
- In vitro protein digestibility was measured using the Multi-enzyme assay.
- Satiety Comparison: Assess satiety levels from patties with different protein forms (Soy powder, TVP, HMMA) at protein-to-carb ratios of 1:2 and 1:1, versus the conventional 1:5 ratio. Satiety was assessed through Visual Analogue Scales (VAS).
- Glycemic Response: Examine how different protein forms impact postprandial blood glucose and glycemic index in meal monitoring over a 3-hour period.

## Protein forms

- Soy protein Isolates passing through Extrusion process to get 3 different Protein forms.

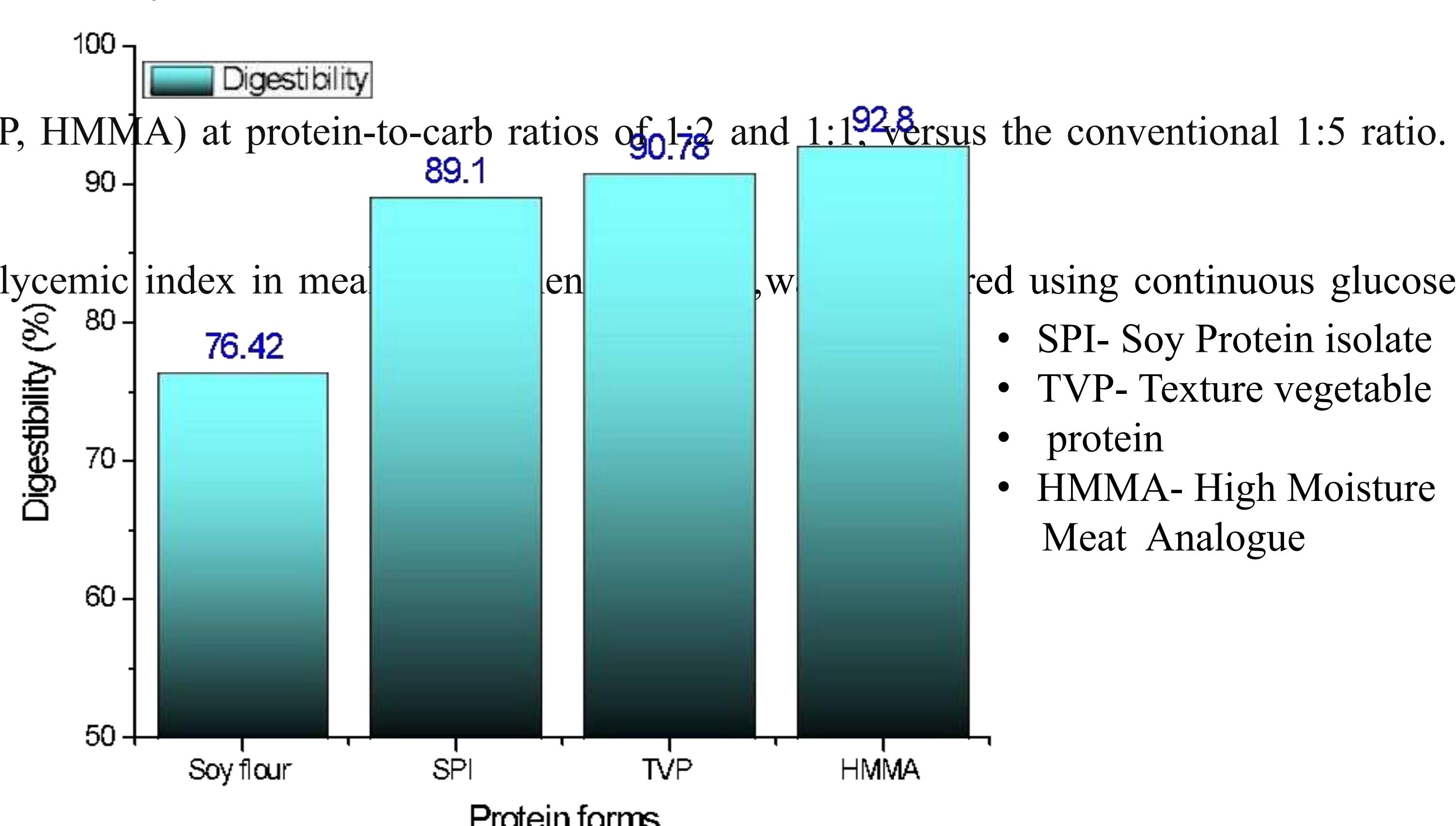
## Results

**Table 1. Nutritional composition of Savory Patty in different protein forms**

Nutrients	(Meal 1) Soy protein powder patty	(Meal 2) TVP Patty	(Meal 3) HMMA Patty
Energy	535	535	535
Protein	33.84	33.84	33.84
Carbohydrates	76.9	76.9	76.9
Fats	16.1	16.1	16.1
Fiber	8.4	8.4	8.4

**Ingredient list of soy protein isolate Patty**

Soy protein HMMA, Poha, Urad dal, Ghee, Ginger, Garlic, Salt, Oil,

**Graph 1 Effect of Processing Conditions on In Vitro Protein Digestibility of Different Soy Protein Forms.**


## Conclusion

- Processing Enhances Digestibility: Soy protein digestibility increases with processing, with high moisture meat analogue (HMMA) showing the highest digestibility (92.62%) due to optimal heat and moisture conditions.
- Superior Satiety and Glycemic Control: Patties with higher protein-to-carbohydrate ratios significantly improve satiety and stabilize postprandial glycemic response, supporting appetite and metabolic health.
- Innovation Fit: The developed patty format meets the “holy trinity” of innovation by delivering high-quality protein, boosting satiety, and providing a convenient breakfast solution.
- Sustainable and Functional: Plant-based protein patties, especially those using HMMA and TVP, offer a sustainable, functional meal replacement option for modern dietary needs.

## References :

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Protein Format	Processing Condition
Protein Isolate Powder- Control	
Low Moisture Extruded Soy Protein	25% Moisture, 100 bar, 150 C
High Moisture Extruded Soy Protein	70% Moisture, 10 bar, 110 C


**Soy Protein Isolates**

**Twin screw extruder**

**Different protein forms Patty**

**Low moisture extruded soy protein**
**High moisture extruded soy protein**