“Pinattu”
A Traditional Palmyrah Product with Low Glycemic and Insulin Response: A Scientific Insight for the General Public

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Abstract

Pinattu, a sun-dried product made from *Borassus flabellifer* (Palmyrah) fruit pulp, is a traditional delicacy in Northern and Eastern Sri Lanka. This study evaluated its glycaemic impact to explore its potential as a functional food for diabetes management. Using standard protocols, the Glycemic Index (GI) and Insulin Index (II) of Pinattu were assessed in healthy adults (n=10), with glucose as the reference food (GI = 100). Pinattu exhibited a low GI (52.9 ± 4.3%) and low II (36.47 ± 5.1%), both significantly lower than glucose ($p < 0.05$). A strong negative correlation was observed between GI/II and both dietary fibre and total phenolic content, indicating slower carbohydrate absorption and reduced insulin demand. Nutritional analysis per 100g showed 248 kcal, 55g available carbohydrates, 12.4g dietary fibre, 2.3g protein, 0.6g fat, and 310mg GAE phenolics. These findings validate Pinattu as a diabetes-friendly, culturally relevant food with health-promoting properties. Furthermore, its unique composition and low glycaemic impact suggest that it could be used in developing a range of value-added products suitable for individuals managing blood sugar levels.

Introduction

The global surge in type 2 diabetes has created a growing need for affordable, culturally relevant foods that support blood glucose control. *Pinattu*, a traditional sun-dried sheet made from *Borassus flabellifer* (Palmyrah) fruit pulp, is commonly consumed in Northern and Eastern Sri Lanka and is naturally rich in dietary fibre and polyphenols. However, its glycaemic properties have not been scientifically studied. This research aimed to evaluate the Glycemic Index (GI) and Insulin Index (II) of *Pinattu* and its nutritional composition. Findings suggest it could also be used in developing a variety of value-added products that support blood glucose control.

Methodology

Participants:
10 healthy adults (5 M, 5 F; 23 ± 2 y; BMI 22 ± 1.6 kg m^{-2}),

fasted overnight.

Test food:
Pinattu portion delivering 50 g available carbohydrate.

Reference food:
50 g anhydrous glucose dissolved in 250 mL water

Protocol
Each participant consumed either the test or reference food on alternate days in a randomized. Following ingestion, venous blood samples were collected at 0 (fasting), 30, 60, and 120 minutes. Glucose levels were measured using a glucose oxidase method, and insulin concentrations were analysed using enzyme-linked immunosorbent assay (ELISA).

Calculations:
Incremental area under the curve by trapezoidal method;
GI = (IAUC_test / IAUC_glucose) × 100; II analogously for insulin.

:Statistics
Paired t-tests; Pearson correlations between GI/II and compositional factors (SPSS v25, $\alpha = 0.05$).

Key findings

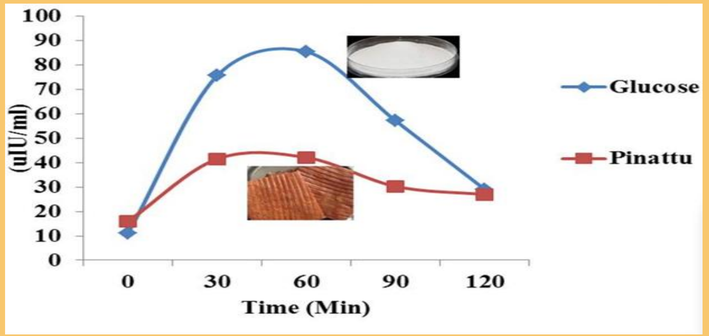

Figure 1 : Area under the curve

Table 1 :Values of GI and II with the reference

Indicator	Pinattu (mean ± SD)	Glucose reference	Classification
Glycemic Index (GI)	52.9 ± 4.3 %	100 %	Low (< 55)
Insulin Index (II)	36.47 ± 5.1 %	100 %	Low

Table 2.: Nutritional content (/100g of pinattu)

No	Nutrient	Value
1	Energy	248 kcal
2	Available carbohydrate	55 g
3	Total dietary fibre	12.4 g
4	Protein	2.3 g
5	Fat	0.6 g
6	Total phenolic content	310 mg GAE
7	Moisture	13.2%

GI and II were each > 45 % lower than the glucose control ($p < 0.01$).
GI correlated negatively with dietary fibre ($r = –0.71$) and total phenolics ($r = –0.66$).
No adverse gastrointestinal events were reported.

Conclusion and Future Directions

Pinattu elicits low glycaemic and insulinaemic responses, supporting its use in dietary strategies for Pinattu elicited low glycaemic and insulinaemic responses, likely due to its high fibre and phenolic content. These findings support its potential as a functional food for blood glucose control. Beyond traditional use, Pinattu can be developed into value-added products such as chocobars, fruit and nut bars, and fruit mincemeat, offering convenient and culturally relevant options for healthier snacking. Further research is recommended to test its effects in diabetic populations and optimize product development.

Panaddu chocobar

Panni panattu

Fruit & nut bar

Reference

Mahilrajan, S., Balakumar, S., Arasaratnam, V., Kumanan, T., & Kailayalinkam, R. (2017). Glycemic index and insulin index of Palmyrah-based edible products commonly consumed in Jaffna. IOSR Journal of Biotechnology and Biochemistry, 3(1), 37–42. https://doi.org/10.9790/264X-03013742