

ABSTRACTS OF POSTER PRESENTATIONS

PR01 - Effect of coriander (*Coriandrum sativum* L.) leaf powder incorporation on cooking characteristics, antioxidant release, and in-vitro starch digestibility of parboiled white rice

Dhilakshi, R.¹, M. Rudhra Premdharshan¹, S. Sivakanthan¹

¹Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna, Sri Lanka.

Introduction & Objectives

Rice (*Oryza sativa* L.) is a staple in Asia; its high starch content can raise blood sugar, increasing type 2 diabetes risk.

This study investigated the impact of incorporating coriander (*Coriandrum sativum* L.) leaf powder (CLP) (2.5% (w/w)) during cooking on the antioxidants and starch digestibility of parboiled white rice (BG 360), widely consumed in Sri Lanka.

Methodology

Rice cooked with CLP (treated) and without CLP (control) were subjected to in vitro digestion (gastric phase: pepsin, pH 1.2, 2 hours and intestinal phase: pancreatic α -amylase, pH 6, 5 hours). Digestive supernatants were analyzed at 30 min intervals for 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity (RSA), 2,2-azinobis(3-ethylbenzothiazoline-6-sulfonate) (ABTS) RSA, ferric reducing antioxidant power (FRAP), total phenolic content (TPC), total flavonoid content (TFC), and amylose content.

Results

The treated rice showed higher antioxidant activity than control, with a marked increase from the gastric phase. DPPH and FRAP values rose steadily in the treated sample (DPPH from 167.97 ± 0.63 to $200.50 \pm 0.38\%$ and FRAP from 690.40 ± 3.36 to 1166.04 ± 2.69 μ mol ascorbic acid equivalent/100g, respectively), while the control showed only slight increases. ABTS activity peaked between the gastric and intestinal phases for both; however, the treated rice consistently outperformed the control. TPC and TFC remained slightly increased throughout digestion, with a prominent increase in TFC observed after gastric digestion in the treated sample. Amylose release was significantly lower in the treated rice, indicating slower starch digestion.

Conclusion

In conclusion, enrichment with CLP yielded functional rice with antioxidant properties and reduced starch digestibility. Further in vivo studies are needed to confirm these findings.

Keywords: Antioxidants, Coriander, *In vitro* digestion, Resistant starch