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Title:

Structuring Elderly-Friendly Rice Porridge: Modulating Digestibility and Bioaccessibility Through Flour Type and Concentration

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text into it.)

Preparation of Your Abstract

1. The title should be as brief as possible but long enough to indicate clearly the nature of the study. Capitalise the first letter of the first word **ONLY** (place names excluded). No full stop at the end.
2. Abstracts should state briefly and clearly the purpose, methods, results and conclusions of the work.

Introduction: Clearly state the purpose of the abstract

Methods: Describe your selection of observations or experimental subjects clearly

Results: Present your results in a logical sequence

Discussion: Emphasize new and important aspects of the study and conclusions that are drawn from them

Introduction:

Rice porridge is a staple food ideal for elderly nutrition due to its soft texture and digestibility. However, optimizing its structure to balance ease of consumption with nutritional functionality remains underexplored. This study investigates how flour type (white vs. red Hommali) and concentration (10% and 15%) influence the textural, rheological, and digestive properties of rice porridge designed for older adults.

Methods:

Porridges were evaluated for rheological behavior, texture profile, antioxidant retention, and in vitro starch digestibility simulating gastrointestinal conditions. Apparent viscosity was assessed at shear rate 50 s⁻¹ to model oral processing, and glycemic index was estimated from hydrolysis curves.

Results:

All samples exhibited shear-thinning behavior favorable for elderly mastication. At 10% concentration, a honey-like texture was observed, shifting to a pudding-like consistency at 15%. Red rice porridge demonstrated improved bioaccessibility of polyphenols and a slower starch digestion rate, leading to a lower estimated glycemic index (69.55 ± 0.10) compared to white rice porridge (77.53 ± 0.11). The higher concentration (15%) enhanced structural stability and lubrication, contributing to better swallowing performance and nutrient delivery.

Discussion:

Red rice flour, particularly at 15% concentration, provides a promising base for elderly-focused porridge by optimizing structure-function attributes, delivering bioactive compounds, and lowering glycemic response. This approach supports the development of next-generation functional foods tailored for aging populations through food matrix modulation.

Keywords:

Rice porridge, elderly nutrition, red rice, bioaccessibility, starch digestion, food texture, glycemic index