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## **Post-preparation storage controls glycemic stability of cooked rice through metabolic and structural reorganization**

*Influența păstrării post-preparare asupra stabilității glicemice a orezului fiert prin reorganizare metabolică și structurală*

Postprandial glycemic response of starchy foods is traditionally evaluated immediately after preparation, although real consumption conditions frequently involve variable post-preparation storage periods. This chapter examines post-preparation storage as a secondary technological stage capable of simultaneously modifying glycemic response, starch structure, and temporal stability of metabolic response in cooked rice. The aim of the study was to investigate the influence of different storage regimes on glycemic stability and to demonstrate that a reduction in glycemic index (GI) does not necessarily reflect metabolic stabilization. Therefore, the analysis integrated GI, resistant starch content (RS), and the post-technological stability coefficient (CSPT), expressing the daily relative variation of glycemic response.

Results showed a progressive decrease in GI with increasing storage duration, associated with structural reorganization of starch and accumulation of resistant starch. The relationship between GI and resistant starch was characterized by a strong inverse correlation ( $r = -0.935$ ;  $p < 0.001$ ), indicating that starch retrogradation represents a key mechanism underlying glycemic attenuation. Temporal stability analysis revealed substantial differences among storage regimes: refrigeration reduced GI but maintained relatively high metabolic variability, whereas prolonged freezing resulted in low CSPT values, corresponding to stable and reproducible glycemic responses. Integration of metabolic and structural indicators enabled the identification of a Metabolic Safety Zone characterized by reduced glycemic response combined with minimal temporal variability. The findings demonstrate that post-preparation storage can shift cooked rice from a merely reduced glycemic response toward a metabolically stable and predictable profile, supporting the transition from static glycemic evaluation toward a dynamic assessment of nutritional quality relevant to dietary management and nutritional security.

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