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04c. High quality rices

COOKING QUALITY AND PHYSICOCHEMICAL TRAITS OF UPLAND RICE WITH DIFFERENT AMYLOSE CONTENT

P.Z. Bassinello¹, R.C. Fonseca², S.N. Koakuzu¹, R.N. Carvalho¹, J. Morais³, C.M.L. Franco³, M. Caliar²

¹*Food Science, Embrapa Rice and Beans, Santo Antonio de Goias, Brazil*

²*Agronomy and Food Engineering, Federal University of Goias, Goiania, Brazil*

³*Cereal Technology, UNESP, São José do Rio Preto, Brazil*

Purpose:

Rice is one of the most consumed cereals around the world and is inserted in the diet of a large part of the world's population, mainly in developing countries, such as Brazil. The culinary features are important for the evaluation of grain quality in rice attributes, directing decisions of breeding programs and allowing to predict their acceptance in the Brazilian market. The objective of this study is to characterize genotypes of upland rice with different amylose content regarding cooking quality by using different physicochemical tools.

Approach and methods used:

Twelve upland rice genotypes were harvested at Embrapa Rice and Beans (2013) and evaluated for Amylose Content (AC) by size exclusion chromatography, Gelatinization Temperature (GT) by the method of alkaline dispersion, hardness and stickiness of cooked grains in Texture Analyzer performed at the Laboratory of Grains and By-products of Embrapa Rice and Beans, Santo Antônio de Goiás/GO, Brazil. The starch chains length were also analyzed by ion-exchange chromatography at the Universidade Estadual Paulista, São José do Rio Preto/SP, Brazil.

Key results:

The genotypes were grouped into three distinct classes for AC, ranging between waxy, low and intermediate values, thus confirming that they are contrasting for this trait. However, not all of these AC groups showed similar GT or texture of cooked rice (hardness and stickiness) when comparing results inter or intra groups. On the other hand, for those genotypes with similar AC and different texture, the starch analysis by ion exchange chromatography showed that they had different distribution of chains sizes, thus indicating that the difference in structure of starch might explain the different cooking profile of these groups not previously segregated by amylose test.

Synthesis and Applications:

This work showed that not necessarily AC and GT are absolute parameters to predict the behavior of rice cooking quality, and more refined tools such as texture analysis (hardness and stickiness) and characterization of starch by chromatography may better explain these differences.