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**Research article****Effects of Plasma Treatment on Cooking and Physical Qualities of Pigmented Thai Rice**

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**Abstract** Plasma surface modification processes account for most of the commercial uses of surface modification because they are fast, efficient methods for improving the adhesion, wettability properties and other surface characteristics of a variety of materials. This research was aimed to investigate of surface modification of pigmented rice by plasma technique. Two rice varieties namely Kum Doi Saket and Hom Nil rice were used. The samples were subjected to plasma treatment with different gas types to determine suitable gas type. The types of gas for plasma treatment were argon, nitrogen and air. The output voltage of the plasma was 0.1428 W at the frequency of 110 Hz and treatment time of 40 min. It was found that plasma treatment with various gas types on the samples caused a reduction in cooking time and increase in water uptake ratio, length expansion ratio and volume expansion ratio, an increase in water absorption, a decrease in contact angles as compared to untreated sample. These results were related to etching of the bran layer of the rice grain which allowed better water transfer into the grain during cooking. It was also found that plasma production using plasma gas had more effect on texture of the rice grains, as compared to without plasma treatment.

**Key words:** Plasma gas, Rice surface modification, Cooking quality, Physical property

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