Physicochemical and Functional characteristics of Tropical Starches from Vietnam and Thailand: granule size, thermal properties and viscosity.

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Abstract:
This study attempts at exploring the physicochemical and functional characteristics of several types of tropical starches separated from starch-producing plants from South-East Asia. In Vietnam and Thailand, despite the fact that starch is the major component of tubers, these crops remain underutilized and represent a potential field for post-harvest applications. In this work, selected root and tuber crops were potato, sweet potato, cassava, taro, yam bean and canna. Sago was the tree crop sample; kudzu and mung bean as legumes samples. Common cereals like rice and maize were also selected as references. Granule size was measured by laser diffraction. Thermal properties were obtained by DSC analysis. Viscosity properties were determined by RVA. The results obtained with cereals, legumes and other types of starches, were contrasted, suggesting a separate analysis of starches from root and tubers. The selected root and tuber starches had lipid, protein and ash contents in the range of 0.16-0.52%, 0.08-0.21% and 0.01-0.44% respectively. Significant differences in the granule size distribution between starches were observed with the largest type of granules for canna (55µm). DSC gelatinization temperatures were lower for cassava than for aroids. Further investigations are needed to better understand the relationships between proximate analysis, granule distribution and thermal properties of starches, thus the quality of the foodstuffs manufactured from root and tuber crops.