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Structural and Chemical Characterization of Rice Starch Using Microscopy and Spectroscopy techniques

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**Structural and Chemical Characterization of Rice
Starch Using Microscopy and Spectroscopy
techniques**

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6th Semester B.Sc. Biotechnology

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Abstract: The finest features in the starch granule structure, arrangement, organization and the molecular packing of amylose and amylopectin were investigated using biochemical, microscopy, and spectroscopic methods. The effect of α -amylase on morphology, molecular structure, and chemical properties of rice starch were characterized by optical microscopy, SEM, XRD, and FTIR spectroscopy. The degrees of hydrolysis of rice starch due to the effect of α -amylase and amylose content were determined. The microscopic analysis was done using optical microscope, SEM. The starch degradation through enzymes were clearly identified using scanning electron microscopy. XRD studies were performed for checking the crystallinity of the starch samples. To determine the glycemic index of the starch the crystalline and thermal properties of starch are the important factors. It is expected that the utilization of resistant starch from rice should not only expand the market but also provide a solution to those who want to consume food with low glycemic index value. Therefore, the basic understanding of morphology, physical and chemical properties of rice starch granules due to the effect of enzyme will provide a valid basis for future studies in food industries.