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# The Natural Thermo-Responsive Rice Granule

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場所: マテリアルサイエンス系研究棟IV棟8階 中セミナー室

### 講演要旨:

Through thermal gravimetric, X-ray diffraction, infrared spectroscopy and scanning electron microscopic analyses, here we reveal that the 4-5  $\mu\text{m}$  diameter pentagonal shaped rice granules, is surprisingly stable against human gut's enzymes such as  $\alpha$ -amylase, trypsin and lipase. The granule can also withstand diluted acid and diluted base. Interestingly, papain can easily destroy the granules and thus releasing all amylose and amylopectin. This fact co-incidentally help explaining why Traditional Thai northeastern cuisine of raw papaya (sauce of papain) with rice has been known to supply people with high energy for labor load. We speculate that some papain-sensitive proteins play an important role in the granular shape stabilization. We employ the reversible thermo-responsive expansion/shrinking character in aqueous medium of this biopolymeric pentagonal granular assembly, to encapsulate an antibiotic vancomycin into the granule at the drug loading content of 80% drug mass with only 20% rice granule mass. The obtained drug-loaded granules display the no-burst but steady sustained release of the water soluble vancomycin in aqueous environment for more than 24 h.

### 講演者略歴:

#### Education

[1992] Ph.D., Miami University, USA

[1986] B.Sc., Chulalongkorn University

#### Work Experiences

[2015 - present] Professor, Chulalongkorn University

[2002 - 2015] Associate Professor, Chulalongkorn University

[1999 - 2001] Assistant Professor, Chulalongkorn University

[1995 - 1996] Post-Doctoral Fellowship, Professor Dr. John Roboz, Department of Neoplastic Disease, Mount Sinai School of Medicine, New York, USA

[1992 - 1998] Lecturer, Chulalongkorn University

[1987 - 1992] Teaching Assistant at the Department of Chemistry, Miami University, Oxford, Ohio, USA