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SUMMARY of
2015 RESEARCH RESULTS REPORT
For International Collaborative Research with IPR, Osaka University

Research Title		Structure and function of novel CBM36 from local strain <i>Geobacillus thermoleovorans</i> IT 08
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<p>Summary</p> <p><i>G.thermoleovorans</i> IT-08 has been isolated from Gunung Pancar hot spring, Bogor, West Java, Indonesia. A xylosidase GbtXyl43B found in the genome of the bacterium was composed of Carbohydrate Binding Module (CBM) in a β-sandwich form and Catalytic Module (CM) in a five bladed β-propeller form. We presumed that CBM mediates binding of insoluble substrate with the enzyme by bringing the catalytic module into prolonged and intimate contact with substrates and, as a result, increases the catalytic efficiency of the enzyme. Genes encoding of CBM36, GbtXyl43B and CM-GbtXyl43B were separately expressed in <i>E.coli</i> BL21. The full-length enzyme was well folded to be a soluble form during expressed in the bacterial cells. On the other hand, neither domains of CBM and CM was hardly solubilized under several conditions of recombinant expression, suggesting the two domains are functionally differentiated, but both regions are important for proper folding of the polypeptide chain. The full-length enzyme was found to be resistant against a heat treatment and could be purified easily. We are now trying to crystalize the full-length enzyme under various conditions. Structural relationship of the two domains such as topology in the 3D structure would be an interesting target for a future study.</p>		