Faculty of Engineering
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Macroalgae biomass: A renewable source for bioethanol

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Macroalgae (seaweed)

Sea lettuce

Fast growth rate, high yield
Low percentage of lignin

Significant amount of sugar (at least 50 %)
Cellulose, starch, laminarin, agar, mannan, alginate etc.

Seaweed

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Saccharification

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Fermentation

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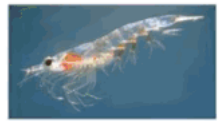
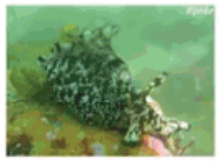
Bioethanol

Discovery of novel enzymes





Enzymes from crustacean, mollusk

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Development of efficient enzymatic saccharification

Content:

Marine macroalgae is gaining wide attention as an alternative renewable source of biomass for production of bioethanol, which is grouped under “Third generation biofuels”. Growth rates and yields of material per surface area that can be obtained in seaweeds forests are significantly higher than those reported for terrestrial plants. However efficient digestive enzymes for saccharification of polysaccharides in seaweed is not available.

Marine invertebrates feeding seaweed possess various glucanases. The digestion system of crustacean and mollusk may thus provide useful clues for the establishment of an artificial process for saccharifying polysaccharide in seaweed.

In order to develop efficient enzymatic saccharification system for seaweed, we are now studying endo and exo-glucanases toward various polysaccharides from marine crustacean and mollusk.

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