

## **Analysis of Mechanotransduction-Induced Microalgae under Direct Membrane Distortion**

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**Abstract :** Mechanotransduction is a mechanism that external mechanical stimulation is converted to biochemical activity in the cell. When applying this mechanism to the unicellular green algae *Chlamydomonas reinhardtii*, the dramatic result that the accumulation of intracellular lipid was up to 60% of dry weight basis occurred. Furthermore, various variations in cellular physiology occurred, but there is a lack of the development of the system and related research for applying that technology to control the mechanical stress and facilitate molecular analyses. In this study, applying a mechanical stress to microalgae, the microfluidic device system that finely induced direct membrane distortion of microalgae. Cellular membrane distortion led to deflagellation, calcium influx and lipid accumulation in microalgae. In conclusion, cytological studies such as mechanotransduction can be actualized by using this system and membrane distortion is a promising inducer for biodiesel production.

**Keywords :** mechanotransduction, microalgae, membrane distortion, biodiesel

**Conference Title :** ICMBE 2016 : International Conference on Medical and Biological Engineering

**Conference Location :** Singapore, Singapore

**Conference Dates :** September 08-09, 2016