

[Analytical pyrolysis reaction characteristics of *Porphyra tenera*](#)

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Abstract:

The non-isothermal pyrolysis of red algae (*Porphyra tenera*) was studied via thermogravimetric (TG) analysis in combination with two types of analytical pyrolyzer-gas chromatography/mass spectrometry (Py-GC/MS) techniques, namely, evolved gas analysis (EGA)-MS and multi-shot Py-GC/MS. The TG and model-free kinetic analyses revealed that the pyrolysis of *P. tenera* proceeded via the independent decomposition of carbohydrates, proteins, and lipids. Differential TG and EGA-MS indicated the existence of three decomposition temperature regions. In the first temperature region (<300°C), carbohydrates were mainly decomposed. Large amounts of pyrolyzates of proteins and lipids such as toluene, phenols, aromatic amino acids, and hexadecanoic acid were produced in the second temperature region (301–380°C). In the third region (>380°C), large amounts of aromatic hydrocarbons and alkanes were obtained by the secondary cracking of the pyrolyzates of proteins and lipids.

* Excerpted from online journal website (Click the title)

Frontier Labs Products used:

EGA/Py-3030D, MJT-1030Ex, UA-DTM-2.5N, UA-5