Quantification of algae cell disruption: Anthrone assay

Principle

Carbohydrates condense with anthrone to form a green color complex after dehydratation with concentrated H2SO4 to form “Furfural”. This can be measured by using colorimetrically at 620nm. Anthrone reacts with dextrines, monosaccharides, disaccharides, polysaccharides, starch, gums, and glycosides.

Reagents

1. Anthrone solution: 200% Anthrone reagent dissolved in concentrated H_2SO_4 (w/v), e.g. 200 mg Anthrone reagent in 100 ml concentrated H_2SO_4
2. Standard Glucose solution: 10% Glucose solution (w/v) gradually diluted 1:5 with 1ml end volume per sample
3. Extracted Carbohydrates in neutral solution, possibly without high salt contents with 1ml end volume per sample

Procedure

1. Add 4 ml of anthrone solution to the working standard samples, respectively. Mix thoroughly .
2. Add 4 ml of anthrone solution to the samples. Mix thoroughly.
3. Heat mixture to 100 °C for 10 minutes. Shock cool the samples in ice bath immediately.
4. Measure colorimetrically at 620nm.
5. Plot standard curve and extract the equation to calculate the amount of carbohydrates in your samples.