DATA OF MANUSCIPT ENTITLED : STUDY ON UTILIZING CARBON DIOXIDE FROM FLUE GAS IN A CULTIVATION OF FRESH WATER MICROALGAE

MATERIALS AND METHOD

Materials

Spirulina platensis supplied by PT Alga Biotechnology Indonesia (PT ALBITEC) Gunung Pati Semarang Indonesia. All chemical for spirulina nutrition were food grade (KNO_3, KH_2PO_4, $MgSO_4.7H_2O$, EDTA, $FeCl_3.6H_2O$, $ZnCl_2$, H_3BO_4, $CuSO_4.5H_2O$, $CaCl_2.6H_2O$, $MnCl_2.4H_2O$, $(NH_4)_6.Mo_7.O_{24}.4H_2O$, NaOH, HCl. Carbon dioxide was technical grade from PT. Samator Semarang Indonesia.

Method

The photobioreactor (PBR) used is vertical column type made from acrylic tube equipped with continuous supply of air mixed with CO_2. This PBR has 50 cm of a height and 3 inch of inside diameter with a total volume approximately 3.5 L in which effective volume of 2 L. The reactor is placed in a shelf equipped with a fluorescence lamp as light source in the night. The PBR was operated at room temperature for 7 days by flowing air mixed with CO_2 from the bottom of the PBR into the reactor through a sparger. Lighting is carried out in the proportion of 10 hours of light and 14 hours of darkness, with a certain light intensity. The pH value was measured with pH paper, and the optical density of the cell (OD) was measure daily. After 7 days process, the weight of the biomass obtained from the microalgae was measured.

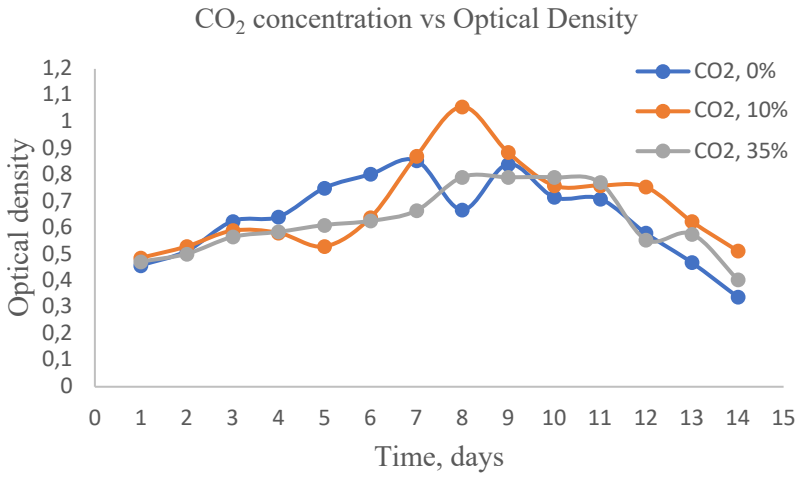

Figure 1. Correlation between CO_2 concentration versus Optical density of spirulina platensis growth

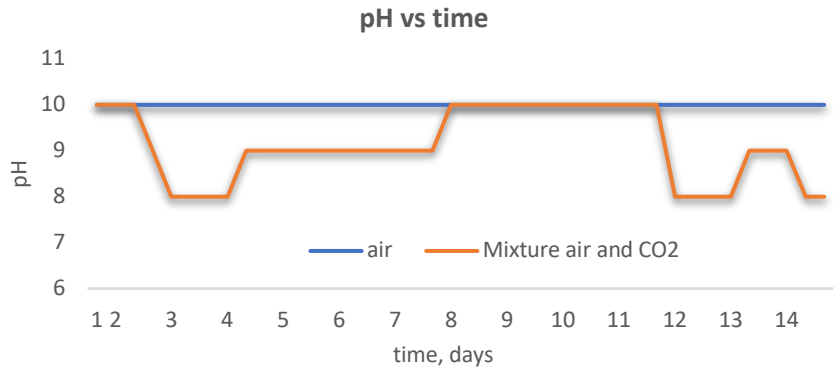

Fig. 2. Correlation of pH to time in the presence of CO_2

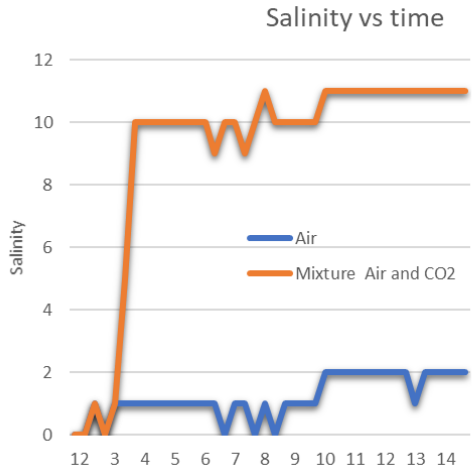

Fig. 3. Correlation of media culture salinity to time

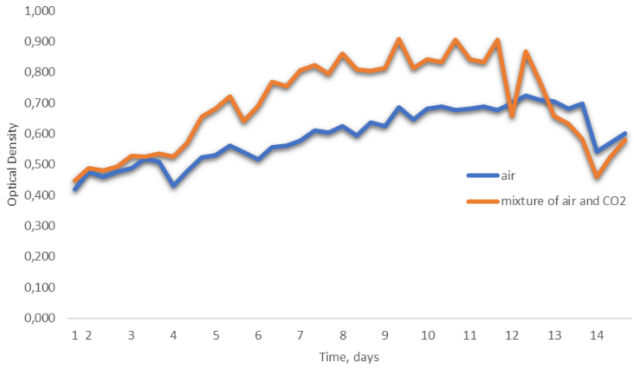

Fig. 4. Correlation of optical density to cultivation time time