**Growth of *Scenedesmus obliquus* in artificial flue gas neutralized with oil shale ash**

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Oil shale is the major energy resource in Estonia, which, as all fossil fuels, generates large amounts of CO2, and additionally up to 1500 ppm sulphur dioxide and waste oil shale ash. Microalgae can be used for biological sequestration of carbon from flue gas, to lessen the emissions of carbon dioxide. In this research, green algae *Scenedesmus obliquus* was grown in artificial flue gas with 14 % CO2 in 1 L bioreactors. Sulphuric acid was added with the final concentration of 500 ppm and 1000 ppm in order to imitate sulphur dioxide in the flue gas. The decrease of pH caused by CO2 and sulphur was neutralized with oil shale ash, which has a pH~12. Photospectrometric measurements of the biomass of *S. obliquus* were used as a proxy for carbon fixation and were carried out every 24 hours for 7 days. Compared to untreated controls, 500 ppm and 1000 ppm treatments had a higher biomass yield (24,65 g L-1 compared to 30,9 g L-1 and 39,1 g L-1 on day 7, respectively). This suggests that trace minerals contained in oil shale ash could be utilized in algae nutrition. A high biomass yield on the other hand implies good carbon fixation. It also suggests that the sulphur does not seem to have an inhibiting effect on the algae. Therefore microalgae could be grown in flue gas for carbon. The biomass can be used for many purposes, including aquafeed and bioenergy production. Further research should be done in waste ash utilization as an inexpensive mineral resource for algal nutrition, as it is a widely-available waste product in Estonia.

*Key words: microalgae, flue gas, oil shale ash, CO2 sequestration*