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This study is focused on harvesting of *Chlorella vulgaris*, well-known microalga with wide range of use in nutrition and health care. Harvesting (separation of cells from a culture medium) is an important part of the production process. It was estimated that approximately 30% of the production costs is the cost of biomass separation. Harvesting densities of photoautotrophic microalgae are relatively low (the final dry biomass concentrations usually vary in range 0.5–3 g/L). Centrifugation is the most frequently used method of harvesting, but it is economically inefficient due to its high process cost.

One of the possible ways of decreasing harvesting costs is pre-concentration of microalgae suspension by electrocoagulation followed by one of common separation methods (e. g. sedimentation or flotation). Process of electrocoagulation helps to increase the biomass concentration and to decrease the volume of the suspension to be centrifuged 20 to 40 times, which leads to reduction of biomass harvesting costs. Electrocoagulation is a well-known method in industrial waste water treatment. The principle of electrocoagulation is forming well-sedimenting aggregates called flocks, which are easy to separate from the cultivation medium. These aggregates are formed from negatively charged microalgae cells and positively charged flocculants. In case of electrocoagulation, the flocculation agents are metal ions released by a sacrificial anode.

In our case, iron electrodes were used in order to keep the food grade quality of the separated *Chlorella* biomass as the biomass is always partly contaminated by the electrode material. The influence of certain operating parameters on the harvesting efficiency was studied in laboratory experiments: electric current, suspension density, cultivation media components concentration, conductivity of the algal suspension, agitation, initial pH, inter-electrode distance, voltage, and time of current application. Parameters of the electrocoagulation process were optimized to achieve high biomass separation efficiency and the lowest possible content of iron in the biomass in order not to excess

recommended daily intake of iron for human. Based on gained knowledge, a continuous bench-scale electrocoagulation device was developed and tested. Flocculation efficiencies above 95% were achieved using this device, while the content of iron in biomass met the legal food requirements.