The aim of the research is to determine the possibility of stimulating intensity of *Chlorella vulgaris* growth using products of anaerobically-treated dairy waste.

The research material used will be *Chlorella vulgaris* originating from the author's own culture. In order to obtain the high concentration of *Chlorella vulgaris* biomass required from the point of view of planned experimental works, multi-level technological procedures of intensive multiplication of the biomass will be conducted. The research will be conducted using post-fermentation leachate and biogas originating from the model fermentation reactor. The labyrinth flow reactor with an effective volume of 70 dm^3 will operate in mesophilic conditions (36 ± 1˚C). Synthetic dairy waste prepared based on whey powder will be introduced to the reactor. The reactor will be loaded with organic compounds at the level of 10 g COD/dm^3. Treated waste will be subject to microfiltration in the vacuum system. The permeate produced will be used as a basis for preparing the culture medium for *Chlorella vulgaris* microalgae. The biogas obtained in the methane fermentation process will be analysed in terms of its composition and flow rate. Desulphurisation of biogas takes place in the desulphurisation column V = 1.80 dm^3, filled with iron(III) oxide pellets. The biogas load on the filtration layer will be 3 $dm^3/dm^3 \cdot h$. Research concerning microalgae cultivation will be divided into two stages. In Stage I, the possibility of applying anaerobically-treated waste in algae cultivation will be examined. Stage II will analyse the possibility of intensifying algae production by using fermentation biogas.

The algae biomass can be obtained in various ways. In 1970s, the mass production of algae started for cosmetic purposes in Europe, Israel and Japan. A breeding pond was used for the first time as a waste treatment plant in the USA, with the algae biomass excess used for methane production. Many attempts have been made to manage the biomass available in water bodies and at the shores of eutrophic water basins. However, there are certain limitations concerning this method of obtaining algae biomass. Since it is difficult to predict blooms and plan the organization of harvesting, transporting and fast utilization, the directed cultivation of algae in open ponds or photo-bioreactors has been common. Cultivation in closed bioreactors guarantees the purity of the product and ensures control over the processes. The proliferation of algae is determined by access to factors intensifying the intensive growth of those organisms (light, water, macroelements, and temperature). Therefore, there is a real need to undertake research into issues of this type. It is important to test various methods of obtaining raw materials required for algae cultivation. The use of unconventional sources of carbon dioxide and macroelements is an important and environmentally-justified element.