The using of *Spirulina platensis* as Supplement of Single-Celled Protein (SCP) to Mice. High protein in *Spirulina platensis* can be used as a source of Single-Celled Protein. By using mice (*Mus musculus*) as an animal laboratory, the objective of this research is to know the influence of Biomass *S. platensis* to the increase of body weight of mice. The name of species is *Mus musculus*, strain is Swiss derivate. Utilized mice were male, 30-50 weighing gram, and 5-7 weeks of age. Treatment group was given by palette and given by biomass of *S. Platensis*, while control also fed palette but did not give biomass of *S. platensis*. Yielded biomass was used as food mixed with palette with composition of dry biomass *S. platensis* with palette was 0%, 10%, 20%, 30%, 40%, and 50%. Data analysis was conducted by using t-test and analysis of variance. The results showed that by giving of dry biomass of *S. platensis* affected to the increasement of body weight from the first day until twelfth day of observation, and decrease on the thirteenth and fourteenth day. Pursuant to result of statistic, there is a significant difference (p < 0.05) between before giving and after giving of dry biomass *S. platensis* during 17 day. By giving dry biomass of *S. platensis* to mice (*Mus musculus*) at first and second week, it was found the difference of average mice body weight among six concentrations of biomass but did not at the third week. It means that not all concentration of biomass have same effect to the increase of mice body weight as a Single-Celled Protein.

*Keywords*: *Spirulina platensis*, *Mus musculus*, Single-Celled Protein, body weight