ABSTRACT

The increasing world deficiency of protein is becoming a main problem of humankind. For this reason, new sources mainly yeast, fungi, bacteria, algae and *Paramecium* named Single Cell Protein (SCP) are used to describe the protein production from biomass, originating from different microbial sources. Microbial biomass has been considered an alternative to conventional sources of food or feed. Ciliated protozoans are very important in the aquatic food chain. Normally, they constitute more than 50 percent of the whole zooplankton biomass. These microorganisms are single cell protein food source, also store free amino acids, carbohydrates, vitamins, mineral, nucleic acids and lipids. *Paramecium*, single-cell free-living protozoans, are members of the phylum Ciliophora that are widespread in the aquatic environment. It has been efficiently used as the first feeding of various species of animals (Borla *et al*., 2002)

The present study is to isolate and culture *Paramecium* under laboratory conditions for optimized growth and to evaluate their use as a possible protein source in the animal feed. Growth optimization was carried out though Response Surface Methodology based on Box-Behnken design. An optimum growth was obtained with 10 wheat grains in 50 ml media of pH 7.0 and 25^{o}C temperature. For SCP analysis, quail was used as experimental animals. The quail birds of zero day were given diets with different supplements of SCP product. A trial of 28 days was run to analyze the effect of the SCP product on the growth performance of birds. Their body weight was calculated daily. Feed Consumption Ratio (FCR) was calculated using weight gained by the birds and the amount of feed consumed. The maximum weight gain was shown by the group fed with the maximum amount of SCP product. The groups fed with non-protein diet, or the commercial diet gained significantly lesser weight than the SCP fed group of birds.