



## **Algae macrophytes and their advantages and disadvantages in the diet of livestock, poultry and aquatic animals - A review**

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### **Abstract**

The growing population of the world and the substantial need for food resources, especially protein sources, has led researchers to explore new food resources with the ability to grow and harvest easily and economically. One of the major sources of protein and nutrients for livestock, poultry and aquatic animals is algae macrophytes (microalgae and macro algae). Algae are found naturally in both marine environments and freshwaters. In addition, microbial cultivation of these organisms can be done in the areas with bad weather conditions in order to create biomasses by using biotechnology methods. Algae, due to their protein richness, unsaturated fatty acids (PUFAs), vitamins, minerals, antioxidants and natural pigments, is a great source of direct human nutrition and animal feed. However, it also should be noted that using of these kinds of biomasses in the diet of livestock, poultry and aquatic animals has limitations because of high absorption of heavy metals, toxins, complicated polysaccharides, etc. The limited use of algae in the diet of animals has improved the quality of meat and egg, and besides lowering cholesterol, it has antioxidant properties and increases the shelf life of meat, egg and etc. Therefore, in the present study, we review the advantages and disadvantages of using algae in the preparation of animal feed.

**Keywords:** Algae, Livestock, poultry and aquatic food, Nutritional supplements, Biofuel waste