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# Effects of Hormones on Physiological Ecology of Aquatic Plants and its Application

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***Abstract:*** Hormone metabolism is an important way for plants to transmit signals and regulate growth and development. The five major hormones of terrestrial plants are also distributed in aquatic plants. Although the decline of aquatic plants caused by environmental pollution has received increasing attention in recent years, the research and application of aquatic plant hormones lags far behind those of terrestrial plants. In this paper, the research achievements of hormone substances in aquatic plants in recent years are summarized, including the types of hormones, physiological and ecological effects of hormones, biosynthetic pathways of hormones, positions and mechanisms of action, and interactions between hormones The application of hormone substances in experiment and practice is comprehensively expounded, and the development direction of research on hormone physiology and ecology of aquatic plants is pointed out.

***Keywords:*** *Physiological Ecology, Aquatic Plants, Applications, Effects of Hormones*

## I. INTRODUCTION

**In the process of Thai language teaching, learning the phonetics well can ensure the smooth progress of Thai language teaching.** When teaching Thai phonetics, teachers should use certain methods to improve the effect of Thai phonetics teaching, so that students can more firmly grasp the Thai phonetics system, and lay a good foundation for future Thai learning. For example, studies have shown that the dominant species in the community in the Ligulong treatment area at 50 g/L changed from large aquatic plants to algae; The toxicity of triazine herbicides (atrazine and oxadiazon) to aquatic plants is significantly higher than that of acetanilide (Lasso and Oros); Macroaquatic plants are more sensitive to herbicides, especially root growth

The LC25 and LC50 concentrations of most herbicides inhibiting the growth of roots and stems are below EEC, and in some cases are more sensitive than fish, zooplankton and other invertebrates. This indicates that due to the high sensitivity and ecological importance of aquatic plants, ecotoxicology research should focus on evaluating the toxicity of aquatic plants. Early spring drought and low temperature often occur in maize seed production in the hilly and gully region of Weibei dry plateau, so there are different degrees of flowering sterility every year. The yield is reduced in the light, and the yield is seriously reduced in the heavy, affecting the enthusiasm of farmers for production. Over the years, In the regulation of flowering period, we continue to use foliar fertilizer, "micro fertilizer", a kind of potassium dihydrogen phosphate, which sometimes has little effect, especially on the fields that do not meet seriously in the flowering period. In order to explore new regulation methods and ways from a technical point of view, and promote a good meeting in the flowering period, the author conducted a test on the effects of foliar spraying of micro fertilizer and hormones on the development of maize tassels, and achieved significant results

Effect of C3D on plant growth: under the above culture conditions, each tank of F is cleaned Duckweed I with thin veins absorbing surface water (F culture J=F says that the fresh weight F minus the initial weight F is the growth amount. There are many aspects such as aquatic animals and plants, human health, etc. Acid rain has different effects on organisms due to its different acidity. First, it will affect the photosynthesis process of plants, and then there will be visible damage. If the acidity of rain continues to become stronger, when the lake water reaches the left or right, plankton and micro organisms will disappear, and minerals in the soil The qualitative elements will also dissolve, which has a great impact on aquatic organisms and fish. In plants, EPSP is further dephosphorylated after synthesis to form branched acid products, which are the key precursors for the synthesis of aromatic amino acids.

## II. THE PROPOSED METHODOLOGY

**In addition, these aromatic amino acids and branched acids are involved in the synthesis of some important secondary metabolites in plants,** such as folic acid, quinones, lignin, auxin and vitamins In this study, we mainly focus on commonly used herbicides, taking into account 12 herbicides that are less used, but have a long life in soil and water, and are not easy to decompose,

First, in 2002, a preliminary test was conducted on the effects of 12 commonly used herbicides on the growth and development of two types of aquatic plants. Then, the herbicide butachlor, which has a significant impact on the biomass of these two types of aquatic plants, was selected to conduct a study on the physiological and ecological effects of Ceratophyllum in July September 2003. Observation method. Due to the progress of microscope technology, the limitation that the naked eye can only observe visible damage to plants has been overcome. For example, the electron microscope is used to observe the hypertrophy and proliferation of mesophyll cells and the failure of epidermal cells in the process of simulated sulfuric acid rain treatment on the cross section of leaves. In addition, scanning electron microscope (can more vividly observe the surface structure and characteristics of leaves, such as the water retention rate and contact angle of plant surface. The ecological value of aquatic plants includes primary production function, species diversity protection, water purification, slope reinforcement and bank protection, etc.

**The whole experiment was conducted under the natural conditions near the window in the sunny room from July to September.** Jade gold imitates the endogenous hormones in plants, which has a good effect on shortening plant internode squatting seedlings, inhibiting the differentiation and formation of young ears, significantly delaying the extraction of male ears, shortening the pollen dispersion period, and having

an important regulatory function on plant growth and development flowering fruit, Spraying can be applied to parents with rapid development in the early stage "Before the tassels are formed and the bracts are drawn out, in the experiment to determine the error range of the optical deflection method, the polarized light signals when there are no plants but only steam water and piped tap water are measured respectively. Take a culture dish with a diameter, add steam water and a piece of glass, and then measure the deflection signal for three hours. This experiment is repeated for times. When measuring the signal of tap water, take tap water and put another piece of glass Post measure deflection signal. The experiment lasted for three hours and was repeated for times. In the experimental operation, it should be noted that the glass sheet should be placed carefully and slowly, because it is easy to generate many bubbles of different sizes between the petri dish and the glass sheet.

Although it is possible to choose a place without bubbles during measurement, if bubbles burst during measurement, it will definitely have an impact on the whole solution. Under the conditions of indoor temperature control and light control, the dry weight of goldfish algae was treated with butachlor of different concentrations. The results showed that there was no significant difference between the concentration of goldfish algae and the control at 5 and 10 days after treatment. With the increase of treatment days, the dry weight of Ceratophyllum spp. changed significantly.

**At 16d, there was a significant negative correlation between the dry weight and the concentration of each treatment** Y=0.6638-0.3347X, r=-0.9167, and the dry weight of Ceratophyllum spp. decreased linearly with the increase of butachlor concentration. The results showed that butachlor at a certain concentration inhibited the growth of Ceratophyllum Flower bud protection can stimulate the transportation of nutrients in crops to flower organ tubes, effectively prevent crops from encountering severe drought in early flowering period, accelerate the growth and development of maize, accelerate the differentiation and formation of young ears, make maize sprout early and disperse pollen early, and have a special effect on leaf spraying of fields with seriously late fathers in regulating the flowering period of maize seed production In addition, there is a change similar to the pulse shape in the figure minute deviation signal. This condition is generally considered to be caused by small particles with high liquid velocity of Zushan solution. In experiments, it is often observed that there are some extremely small soluble particles floating in the solution in the form of thin lines.

Zhuxian, Xunran, this experiment was conducted in a dark room isolated by the laboratory, but there was no room in the laboratory. The influence of phosphate and glyphosate on pigment content of soft shelled turtle is shown in Table 3-2. Chlorophyll a, b and total chlorophyll content showed significant interaction on these two factors (Table 3-3). At all phosphate levels, high glyphosate concentration (5 and 15mg/L) could significantly reduce chlorophyll a and total chlorophyll content, while chlorophyll b was only in 0 and 50mg/L phosphate, and high glyphosate concentration (5 and 15mg/L) significantly decreased.

It can be seen from Figure 1 that the photosynthetic oxygen release rate of Ceratophyllum in the control fluctuates up and down, but the range of change is small. After butachlor treatment, the rate of photosynthetic oxygen release showed a significant downward trend, and on the 16th day, there was a significant difference between the treatments with different concentrations ($F=4.38>F0.05=3.11$; df=5,12; $P<0.05$). The multiple comparison of the mean values showed that the photosynthetic oxygen release rate of the control was significantly higher than that of the 2,4,6,8mg/L treatment, and the latter decreased 36.02, 41.64, 42.74, 48.43, respectively, compared with the control,. There was a significant negative correlation between photosynthetic oxygen release rate and butachlor concentration (r=-0.8690), and the regression equation was Y=9.5559-0.578X.

**The effect of butachlor treatment on GST activity in Ceratophyllum spp. was mainly shown in the changing trend.** The activity of GST in the control group increased steadily with time (Table 5). There was a significant positive correlation between the activity of GST and the days of culture (r=0.9192). The regression equation was Y=0.9474X-15.5115. However, the change of GST under different concentrations of butachlor was related to the concentration of the treatment. High concentrations (8mg/L) were generally inhibited first and then gradually recovered. Five days after treatment, the activity of GST was the lowest, significantly lower than that under 1mg/L treatment. The blue ball represents floating dust, which moves in one direction with time.

The red line represents the probe light, the curvature of the line represents the degree of deflection, and the arrow represents the direction of deflection of the probe light. The floating dust, namely the blue ball, has been moving in one direction over time, because it passes through the optical path of the probe light, so it has an impact on the deflection signal of the probe light. The movement of floating dust with time, the dynamic process of its influence on the detection light deflection signal, and the activities of SOD, CAT, POD, APX and PPO show that glyphosate and phosphate have a significant interaction (Table 3-3). Glyphosate and phosphate treatment significantly increased SOD activity. There was no significant difference between different doses of glyphosate when 50 mg/L malate was added. In addition, 100mg/L malate significantly reduced the SOD activity of plants treated with glyphosate at different concentrations (Fig. 3-2b). CAT activity increased sharply at 1 and 5mg/L glyphosate and 50mg/L phosphate.

## CONCLUSION

The study of aquatic plant hormones will help to understand the differences in growth and development between aquatic plants and terrestrial plants, help to deeply understand the synthesis and action mechanism of hormones, and help to establish the role of hormones in the adaptability, stress resistance and evolution of species. Although there have been some achievements in the research of hormones in aquatic plants, and there are two good experimental materials, duckweed and Rumex palustris, and advanced experimental methods and instruments have facilitated the research of hormones, the research of hormones in aquatic plants is still far behind that in terrestrial plants in general.

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