

Abstract

To effect of foliar application of chitosan in drought stress on the qualitative and quantitative on *Carum copticum* a field experiment was performed 2013 in research station (chahnimeh) of Agriculture university of zabol. split plot experiment performed in a randomized complete block design with three replications. Drought stress with three levels (50, 100, and 150 mm) was main plot and chitosan with five levels (0, 0.1, 0.5 1 and 2 gr/ liter) was sub plot. the Characteristics of study included quantitative traits (height plant, number of lateral branch, umbels per plant, umbelets the umbrella, umbelet seed number, seed weight, seed yield, biological yield, Leaf area index. and harvest index) and qualitative traits were included (the amount of chlorophyll a, chlorophyll b, total chlorophyll and carotenoids, proline and soluble carbohydrate leaves, the activity of catalase, peroxidase, ascorbate peroxidase, guaiacol peroxidase and polyphenol oxidase, weight essential oils percentage and essential oils yield). The results showed that drought stress of all traits was significant. The treatment of control and average stress dose not significant different. In the other hand in high stress all the trait quantitative and weight, percentage and essential oils yield and photosynthetic pigments. The means comparision showed that activity of antioxidant enzymes, proline and soluble carbon hydrates leaves was increased to high stress. The reasons of this increased for plant resistance on stress. The results showed that chitosan increased the all traits qualitative and umbels per plant, umbelets the umbrella, umbelet seed number, seed weight, seed yield, weight essential oils percentage and essential oils yield significant difference. Comparison of means showed that the highest of percentage and essential oils yield in control stress and 1, 2 gr/liter chitosan was obtained. In oder to The highest of enzyme activity and proline and carbohydrates soluble was obtained in 2 gr/liter chitosan.

Key words: chitosan, drought stress, essential oil content and essential oils yield, antioxidant enzymes, *Carum copticum*



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drought stress

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