

Study on Activity of Several Enzymes of Cytoplasmic Male-sterile Cotton Line Jin A

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Abstract: Cytoplasmic male sterile line Jin A was derived from trispecific hybrids [(*G. hirsutum*) × (*G. thurberi* Tod D₁)] × [(*G. arboreum*) × (*G. hirsutum*)]. This study deals with Jin A male sterile and its maintainer line in activity of several enzymes. Cotyledon, leaf, pollen and anther in two developed stages (sporogenous cell division and meiosis progressed) of cytoplasmic male sterile line Jin A and its maintainer line were collected from field. In the two developed stages based on observations under microscope, activity of peroxide (POD), cytochrome oxidase (COD), superoxide dismutase (SOD) and succinic dehydrogenase were determined.

A correlation between CMS and varies of activity of enzyme were studied. The activity of

four enzymes with mitochondrial function in cotyledon, leaf and anther of Jin A cytoplasmic male sterile and in those of its maintainer line were also studied. The results showed that activity of peroxide (POD), cytochrome oxidase (COD), superoxide dismutase (SOD) and succinic dehydrogenase in the anther of the sterile line were lower than those in the fertile line; but such differences were not found between the leaves of the sterile line and the fertile line, and only the activity of succinic dehydrogenase was lower in the cotyledon of the sterile line than that of fertile line. These indicated different metabolize between the sterile line and fertile lines. Peroxide (POD), cytochrome oxidase (COD), superoxide dismutase (SOD) and succinic dehydrogenase were important enzymes in breathing chain. These indicated difference in mitochondrial structure and function between the sterile line and fertile lines too.

Key words: cotton; Jin A cytoplasmic male sterile line; activity of enzyme