

Succinic semialdehyde (SSA) is an intermediate metabolite in the degradation of the neurotransmitter gamma-aminobutyric acid (GABA) in the brain. GABA is a major inhibitory neurotransmitter that helps regulate neuronal activity in the brain.

SSA is produced from GABA by the enzyme GABA transaminase and is then converted to succinic acid by the enzyme succinic semialdehyde dehydrogenase (SSADH). Mutations in the gene that encodes for SSADH can result in a rare genetic disorder called succinic semialdehyde dehydrogenase deficiency, which is characterized by a buildup of SSA in the brain and other tissues.

Elevated levels of SSA have been implicated in various neurological disorders, including epilepsy, addiction, and neurodegenerative diseases. SSA has been shown to have toxic effects on neurons, including inducing oxidative stress and increasing neuronal excitability. However, the exact mechanisms by which SSA contributes to the development and progression of these disorders are not fully understood.

Research on the role of SSA in the brain and its involvement in neurological disorders is ongoing. Further understanding of SSA metabolism and its effects on neuronal function may lead to the development of new therapies for these disorders.

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