Several non-protein amino acids such as djenkolic acid, dihydroxy-phenylalanine, alpha-amino-beta-methylaminopropionic acid, selenocystathionine and mimosine are well known toxic amino acids. Among them, mimosine has been extensively studied here. The major toxic symptoms of mimosine to the rat are retardation of growth, alopecia and cataract formation. The first demonstration of the toxicity mechanism of mimosine is the formation of a Schiff's base between mimosine and pyridoxal 5-phosphate in vitro. The preincubation of mimosine with pyridoxal phosphate decreased the activation of glutamic-oxaloacetate transaminase from hog heart by the coenzyme. Similar results were obtained for L-dopa decarboxylase from hog kidney. However, no effect of mimosine on the activation of the B₆ enzymes by the coenzyme was observed when mimosine was added to the enzyme-coenzyme complex. This suggests that mimosine can inhibit the loosely bound B₆-enzymes but not tightly bound B₆-enzymes.

It has been shown that the growth inhibition produced by feeding 0.5% mimosine to rats can be partially counteracted by supplementio with phenylalanine and wholly reversed with tyrosine.

Mimosine was found to have an inhibitory effect on the DNA biosynthesis in HEP-2 cells as well as collagen biosynthesis in embryonic chicken cartilage. Tyrosinase and phenoloxidase of melanoma, and DNA polymerase of Paramecium tetraurelia were also inhibited by mimosine.

It was demonstrated that the inhibition of the growth of mung bean seedlings by mimosine could be reversed by pyridoxal phosphate and that rats fed mimosine excreted large amounts of cystathionine in their urine. But the administration of high level of B vitamins failed to influence the cataract induced by mimosine. These experimental results indicate that the mechanism of toxicity of mimosine is very complex. Further investigation proceeds.