

Accumulation of the Stress Metabolite γ -aminobutyric Acid (GABA) in Coffee Seeds (*Coffea arabica* L.) During Post Harvest Processing

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SUMMARY

In dry process coffee high amounts of γ -aminobutyric acid (GABA) are accumulated, whereas only small amounts of this non-protein amino acid are present in wet process beans. Untreated fresh seeds contain GABA only in traces. In plants, GABA is considered as stress metabolite, which especially is accumulated in tissues that are exposed to drought stress. It is apparent that the living and vital coffee seeds, which are dried from an initial water content of 50% down to about 12% suffer massive drought stress and express a related metabolism. The cause, why the stress related GABA accumulation occurs only in dry process seeds, although also the wet process seeds are dried down to a final water content of 12% is due to different time frames for the drying. Whereas in dry processed seeds, the time span for an induced, active stress metabolism is about 4 to 8 days, it is only 1 to 2 days in the case of drying the wet processed parchment beans.

GABA accumulation is enhanced when the time span for drying is elongated, e.g. due to artificial moistening. GABA accumulation is accompanied by a corresponding decrease in glutamate content, confirming that GABA is produced by decarboxylation of glutamic acid.