

ASSAY OF CYANOGENIC GLUCOSIDE IN
HEVEA BRASILLIENSIS LEAVES

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Cyanogenic glucosides defined chemically as the glucoside derivative of hydroxy nitriles represent a rather limited class of natural products widely distributed in the plant kingdom. The major cyanogenic glucoside in Rubber (Hevea brasilliensis) is reported to be linamarin⁽¹⁾.

Linamarin on hydrolysis by the enzyme linamarase (usually present with the glucoside) or by acid, liberates hydrogen cyanide.

Studies carried out with Rubber leaves revealed that endogenous enzyme levels are sufficiently high to completely hydrolyse the glucoside in 0.5h. Hydrolysis was achieved by incubation of leaves with water at room temperature. The liberated hydrogen cyanide was quantitatively estimated by the colorimetric picric acid method⁽²⁾ after steam distillation. Longer hydrolysis times (up to 24h) did not affect cyanide recovery.

Most reproducible results were obtained when the assay was carried out within one day of collection of leaves. Storage before assay, if necessary was best carried out at 15°C in sealed polythene bags, the maximum time of storage being 3 days, after which a loss of cyanide was observed.

Storage of leaves at room temperature after one day or at temperatures below 4°C led to significant losses of cyanide, possibly due to liberation of hydrogen cyanide on deterioration of leaf tissue.

References:

Butler, G.W. (1965) Phytochemistry 4: 127

Wood (1960) J.Sci.Fd.Agric: 16:300