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CHANGES IN NUTRIENT CONTENT OF COCONUT WATER AS A RESULT OF ROOT (WILT) INFECTION

A study on the effect of root (wilt) disease on the nutrient contents of coconut water obtained from eight month old nuts was attempted. The palms were of West Coast Tall variety of about 45 years old. They were grouped into four according to the intensity of root (wilt) disease, viz., apparently healthy and palms having root (wilt) disease indices 15-25, 26-35 and above 35.

From each group 5 palms were selected for taking samples. Immediately after harvesting the nuts (taken 8 months after tagging the inflorescence), the coconut water was separated and kept at 4°C or analysis was done. Alcohol extract was used for amino acid and sugar determinations. For amino acid determination ninhydrin method was used and sugar was estimated by phenol-sulphuric acid method. The residue after

the alcohol extraction was used for protein estimation by Lowry's method (Lowry et.al. 1951). Samples of coconut water (20 ml) were evaporated to dryness on a sandbath and ashed. Hydrochloric acid extract of the ash was used for mineral analysis. Sodium and potassium were determined by flame photometry, calcium and magnesium by titrimetry using EDTA and phosphorus by the ammonium molybdate calorimetric method.

The total sugar content of coconut water at the 8 months old stage (Table 1) was found to vary from 2.02 to 2.20 g per 100 ml. The sugar content was not much affected by the root (wilt) disease. The aminoacid content varied from 96.32 to 113.50 mg per 100 ml coconut water. At the initial stage of the disease, the amino acid content was found to be the lowest. Afterwards it increased and maximum was found at the final stages of disease. This points to the impaired protein metabolism due to the incidence of the disease. Similar increase in free aminoacids was also noted in tender leaves and in other leaf tissues of root (wilt) affected palms. (Varkey et. al., 1969 and Pillai, et. al., 1965). The protein content of the coconut water in all the samples were trace.

Ash content of the coconut water was found to decrease with increase in disease intensity of the palm. It varied from 0.564 to 0.439 g/100 ml of coconut water. The coconut water was found to be rich in sodium and potassium. They were also affected by the incidence of root (wilt) disease. In palms having high disease intensity the amounts of sodium and potassium were less. Their contents varied from 268-232 mg for sodium and 194-221 mg for potassium in 100 ml of coconut water. The bivalent cations viz., calcium and magnesium also varied with the intensity of the disease. In the advanced stages of disease they were found to be increased. However in leaf tissues the calcium and magnesium contents were found to be higher in healthy palms (Cecil, 1975). Accumulation of these ions in coconut water in the diseased stages can be attributed to the changes in the mineral metabolism due to the occurrence of disease. The calcium content varied from 15.63 to 22.45 mg and magnesium from 9.89 to 13.89 mg per 100 ml coconut water. Phosphorus content was also high in the advanced stages of the disease. The variation was from 6.36 to 9.44 mg/100 ml. A former study revealed that no significant changes occurred to the biochemical constituents of coconut meat due to the incidence of root (wilt) disease (Sosamma et.al. under publication). However, in the case of coconut water most of the constituents were changed due to the disease. These results also showed that the quality of coconut water was affected to a higher extent compared to the coconut meat due to the incidence of root (wilt) disease.

Key words: *Coconut, Root (Wilt) Disease, Nutrient Content.*

Table 1. Nutrient content of coconut water of 8 month old nuts from palms affected by varying intensity of root (wilt) disease (mean of 5 values per 100 ml coconut water)

Disease index of the palm	Total sugar (g)	Amino acid (mg)	Ash (g)	Na (mg)	K (mg)	Ca (mg)	Mg (mg)	P (mg)
Below 15 (Apparently healthy)	2.04	107.50	0.564	261	221	16.03	9.89	6.45
15 - 25	2.20	96.32	0.564	268	212	15.63	12.04	6.36
26 - 35	2.02	103.53	0.486	244	202	18.44	10.38	6.95
Above 35	2.07	113.50	0.439	232	194	22.45	13.38	9.44

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