EFFECT OF SOUTHERN BEAN MOSAIC VIRUS INFECTION ON THE LEAF PROTEIN CONCENTRATES IN COWPEA CULTIVARS

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EFFECT of several factors on leaf protein yield has been studied except that of virus infection. The present communication deals with the effect of southern bean mosaic virus (SBMV) infection on the leaf protein yield of different cowpea cultivars.

The experimental methods (table 1) were the same as described by Singh and Mall.[1] Seven-day old seedlings (150) of each cultivars were grown separately in clay pots (25 cm diameter) and were mechanically inoculated with SBMV. An equal number of seedlings was maintained as healthy control. Leaves were harvested 45 days after inoculation. The leaf protein concentrates (LPC) isolated from fresh leaves[2] and were pale brown to gray. Total nitrogen, protein, total sugar and starch were analysed from oven-dried samples. The total nitrogen was determined by the Doneen micro method[3,4]. Total protein was estimated as TCA insoluble nitrogen. Total sugar and starch were also estimated[5]. Percent extractibility of LPC was calculated according to Byers[6].

The results indicated that LPC yield was higher in cowpea infected than in healthy ones. The virus infection also increased total nitrogen and protein content in LPC while the total sugar and starch decreased. The effect, however, varied with the cultivar[7,8]. Higher amounts of total nitrogen and protein in diseased samples appeared as a consequence of virus multiplication, which involves the synthesis of virus specific proteins[9,10]. The decrease in total sugar and starch in infected plant could be due to the reduced synthesis of these compounds or their enhanced breakdown for increased respiratory demand or both[11].

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Table 1 *Effect of SBMV in cowpea leaves on the extractibility of LPC and total protein, total sugar and starch (expressed as mg/100 mg dry wt.) in LPC.*

Cultivar	% LPC Extractibility	Total protein	Total sugar	starch
Pusa Dofasali	H 14.5	21.5	4.1	3.4
	D 15.6	24.3	3.2	2.9
Pusa Barsati	H 14.1	20.8	4.0	3.3
	D 15.3	22.6	3.2	2.9
Pusa Phalguni	H 14.0	20.9	3.9	3.3
	D 15.3	22.5	3.2	2.8
Lobia T_2	H 13.9	20.7	3.9	3.2
	D 14.6	22.0	3.3	2.8
Co. Pusa-4	H 13.8	20.4	3.9	3.3
	D 14.5	21.6	3.2	2.8
K-11	H 14.0	19.3	3.9	3.2
	D 14.9	21.5	3.2	2.8
C-13	H 14.2	19.7	4.0	3.3
	D 15.1	22.1	3.3	2.8

H = Healthy; D = Diseased