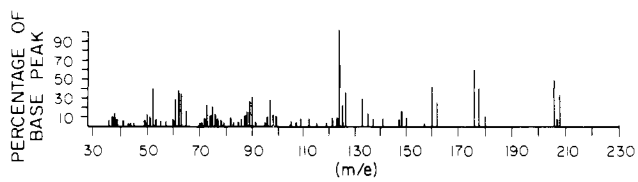

Figure 1. Reconstructed gas chromatogram of peach-isooctane extract.

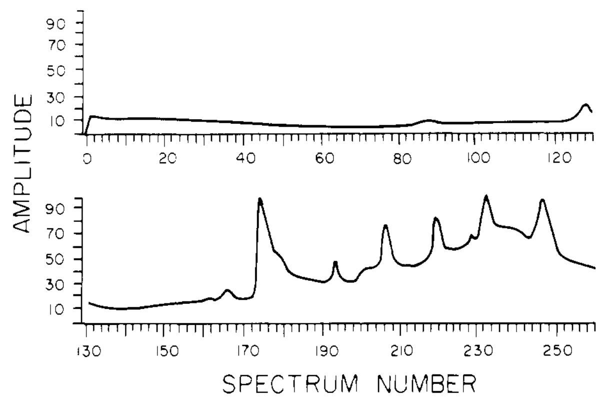

Figure 2. Mass spectrum no. 127 with spectrum no. 129 subtracted as background.

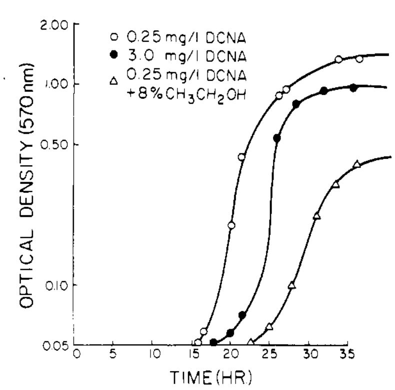

Figure 3. Growth curves at various concentrations of DCNA.

was not present in the batches that fermented normally.

DCNA might be expected to be present in the peach concentrates since the fungicide is recommended to be used on the tree ripening fruit up to the day of harvest and on the harvested fruit at the hydrocooler. However, the recommended concentration for the spray is only about 900 ppm in a water suspension (Veit, 1974). With such low concentrations, it is not likely that a relatively high concentration of DCNA would be found in the concentrate.

When the peach concentrate is reconstituted for fermentation at the winery, however, a constant dilution factor is not used. From 4 to 10 parts of water may be added to the concentrate, depending on its pH. This factor may give rise to the erratic nature of the problem.

The slow-fermenting concentrate examined in these laboratory studies contained 0.25 ppm of DCNA. In the nonalcoholic laboratory cultures containing 0.25 ppm of DCNA, however, no effect on the yeast growth curve was observed. In nonalcoholic media containing as high as 3.0 ppm of DCNA, although the total yeast cell concentrations were decreased, the lag phase time was increased by only 2 h.

However, in the media that were made to duplicate the wine vat conditions (8% ethanol and 2.50 g of sucrose/l.), a DCNA concentration of 0.25 ppm increased the lag phase time by 8 h and decreased the total cell density by more than 50% (Figure 3).

This work indicates that DCNA does pass through the current peach processing method in sufficient quantities to cause, in the presence of alcohol, a significant decrease in yeast growth rate as experienced by wineries.

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Mineral Contents of Some High Yielding Varieties of Bengal Gram (*Cicer arietinum*)

Seeds of seven high yielding varieties of Bengal gram, grown at the same locality with similar fertilizer applications and farm practices, were analyzed for copper, iron, calcium, magnesium, sodium, and potassium contents. A wide variation for these minerals was observed among different varieties.

It is now increasingly realized that pulses in addition to being an important source of protein are also a good source of some minerals (Goswami and Basu, 1938; Chowdhury and Basu, 1939). The work on evolution of new high yielding varieties of pulses has opened a new vista for study. Copious literature is available to indicate that with the change in genotype, significant changes occur in protein and amino acid contents of pulses (Esh et al., 1959, 1960;

Table I. Copper, Iron, Calcium, Magnesium, Sodium, and Potassium Contents in Various Varieties of Bengal Gram

Variety	Cu, μg/100 g	Fe, mg/100 g	Ca, mg/100 g	Mg, mg/100 g	Na, mg/100 g	K, mg/100 g
I. Type-3	1046.0 ± 32.7[a]	5.86 ± 0.999	155.2 ± 5.51	150.2 ± 5.188	150.13 ± 4.67	791.0 ± 11.4
II. JG-62	927.9 ± 39.65	6.48 ± 0.301	216.9 ± 7.15	147.5 ± 5.09	9.76 ± 1.25	864.2 ± 19.75
III. H-208	850.2 ± 28.72	4.61 ± 0.853	233.03 ± 7.18	140.21 ± 8.228	10.18 ± 0.77	992.5 ± 28.86
IV. Pusa-53	1014.3 ± 25.38	6.15 ± 0.412	191.9 ± 7.77	167.07 ± 6.14	19.4 ± 1.69	1003.3 ± 11.49
V. C-235	919.2 ± 15.59	5.78 ± 0.98	217.6 ± 8.52	167.7 ± 7.49	129.1 ± 2.53	759.3 ± 11.0
VI. G-130	893.2 ± 29.5	5.21 ± 0.776	196.2 ± 5.12	161.63 ± 5.425	136.75 ± 2.50	790.89 ± 5.83
VII. Gwalior-2	1066.3 ± 21.86	8.00 ± 0.876	192.5 ± 4.08	162.02 ± 3.071	85.48 ± 2.85	1028.4 ± 14.66

[a] Standard deviation. The mineral contents are calculated on the basis of samples as received from the farm, without giving consideration to moisture content. However, the moisture contents of these varieties were as follows: 11.21% in Type-3; 10.41% in JG-62; 11.36% in H-208; 9.23% in Pusa-53; 10.50% in C-235; 8.34% in G-130; and 12.62% in Gwalior-2.

Leonov, 1965; Chandra and Arora, 1968; Amirshahi, 1970; Sharma and Goswami, 1971) but to what extent the variation in mineral contents of pulses occurs among these varieties is little known (Dhingra and Das, 1959; Sharma and Goswami, 1971).

In the present investigations new high yielding varieties of Bengal gram are analyzed to observe the effect of genetic strain on mineral contents of this pulse.

EXPERIMENTAL SECTION

Seeds of seven purebred varieties of Bengal gram grown during 1972–1973 were procured from J. N. Agriculture University, Jabalpur (JG-62, H-208, and Gwalior-2) and from R. B. S. College of Agriculture, Bichpuri, Agra (Type-3, C-235, Pusa-53, and G-130). Each variety was grown during the winter season of 1973–1974 at the experimental farm of R. B. S. College of Agriculture, Bichpuri (Agra) in a number of plots. Fertilizer application (100 kg of diammonium phosphate/ha), irrigation (one, at the flowering stage), and other farm practices were similar for each plot. Each variety was grown in three plots. After harvesting the seeds of these varieties were dried in the shade. For each variety, five samples from each plot were collected (AOAC, 1970, p 211), powdered in glass mortar, and stored in separate tightly stoppered polyethylene bottles. Samples for analysis were drawn from these stocks.

Sodium and potassium were determined by flame photometer (EEL Model) according to the methods of analysis of the AOAC. Calcium was determined by the method of Clark and Collip (1925) and magnesium by the method of Neill and Neely (1956). Iron was determined according to Andrews and Felt (1941) and copper according to Forster (1953).

RESULTS AND DISCUSSION

Copper, iron, calcium, magnesium, sodium, and potassium contents of different varieties of Bengal gram are presented in Table I. The mineral contents are calculated on the basis of samples as received from the farm, without giving consideration to moisture content. However, the moisture contents of these varieties were as follows: 11.21% in Type-3; 10.41% in JG-62; 11.36% in H-208; 9.23% in Pusa-53; 10.50% in C-235; 8.34% in G-130; and 12.62% in Gwalior-2.

In general, results obtained for different minerals in the present study were in good agreement with values reported earlier (Dhingra and Das, 1959; Balsubramanian et al., 1962; Roychowdhury et al., 1962; Mankarnika et al., 1966; Gopalan et al., 1974). However, sodium content in three varieties, namely JG-62, H-208, and Pusa-53, was found to be low as compared to other varieties studied here and values reported in the literature.

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