

4. Chemical analysis of certain mutant aleurone tissue.

The chemical nature of the mutants \underline{C}^I , \underline{c}_1 , \underline{c}_2 and \underline{r} was studied by using certain diagnostic chemical tests, chromatography and spectroscopy. Chromatograms of all these mutant tissues are colorless and no phenolic substance was detected. Various chemical tests, such as ferric coloration, sodium borohydride-HCl (for detecting flavonone), sodium borohydride-DDQ test (for detecting dihydrochalcones), Pachecko's test (also for detecting flavonone), HCl test (for detecting leucoanthocyanidins), Magnesium-hydrochloric acid test and Zinc-hydrochloric acid test (general), led to the conclusion that none of these mutant tissues accumulates any detectable flavonoid pigments. However, it was found that \underline{c}_1 extract (aqueous MeOH) responded positively to acid tests, i.e., effervescence with sodium bicarbonate and reduction of potassium permanganate. On paper chromatography with the solvent mixture ethylacetate:formic acid:water (10:2:3), it gave one colorless spot which fluoresced under UV (long range) with an Rf value of 0.63 and another faint fluorescent spot which runs along with the solvent front. When the chromatograms were sprayed with 1% sodium nitrite in 10% acetic acid and fumed with ammonia, the spot turned yellow. Thus, the preliminary analysis suggests that the accumulated substance in \underline{c}_1 mutant aleurone tissue may be a phenolic acid whose Rf values closely resemble those of chlorogenic acid. Further studies are in progress.

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1. Soft endosperm genes.

A group of endosperm mutants have been studied which have phenotypes similar to "opaque" but their expression is dependent on duplicate recessive factors. To distinguish them from the floury series (monogenic with dosage effect) and the opaque series (monogenic