

Probable origin of bz₁ pigment

Hydrolyzed extracts of bz₁ silks yield a relatively large luteolinidin spot, but no other anthocyanidins. When bz₁ silks are extracted in 1% HCl in MeOH prior to their emergence from the leaf sheath, the extract is light green and tests positive for luteoforol. After the extract has been in the refrigerator for a period of time (two or three weeks), it becomes orange-brown. When chromatographed, a brown pigment is obtained that behaves in the same manner as the brown pigment which is obtained by extracting bronze coloured tissues of mature bz₁ plants. It seems probable, therefore, that the brown coloured bz₁ pigment is a phlobaphene formed largely if not solely from luteoforol.

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2. Repression of anthocyanin pigmentation in young seedlings by Pl.

We have repeatedly observed that when our W22 r^g B pl and r^g B Pl strains are grown together under the same conditions, the r^g B pl seedlings are always the first to become pigmented. At the second or third internode stages, plants of the two genotypes are virtually indistinguishable, and it is not until the fourth or fifth internode stages that the r^g B Pl strains are clearly darker than the r^g B pl. We have recently compared O.D. readings of extracts from several Pl and pl strains, and have found that Pl not only represses B pigment in the seedlings, but also pigment conditioned by an R^r factor (specifically, R^r Ecuador 1172). The effect is most marked at the first internode stage, and becomes progressively less as the seedling matures. In one experiment, measuring only the first internode plus the ligule region of the first leaf, significantly lower O.D. readings were obtained from r^g B Pl plants as compared to r^g B pl plants in samples taken every day for a period of 10 days. In another group of seedlings at the early first leaf stage, Ecuador R^r B^b pl seedlings were strongly pigmented in contrast to Ecuador R^r B^b Pl seedlings, which had little or no pigment and were indistinguishable from r^g B^b Pl and r^g B^b pl plants of the same stage. The Pl seedlings did develop pigment later, but differences were still measurable even at the

third leaf stage, particularly in the younger (most recently developed) tissues. "Repression" may not be the right word to use for this Pl effect, but it seems clear that Pl can prevent or retard pigment formation in plant parts capable of producing pigment in the absence of Pl, just as it can condition or enhance pigment production in other parts of the same plant (e.g. cob, anthers, etc.).

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3. C-glycosylflavones.

Levings and Stuber (Genetics 69: 491-498, 1971) have recently reported that luteolin derivatives have been found in silks that respond to cutting by turning brown at the point of injury. One of these derivatives was identified as an isoorientin derivative, a C-glycosylflavone.

We have found that, in our W22 strains, there is an abundance of C-glycosylflavones in the hydrolyzed extracts of the silks, anthers, and tassel glumes of a₁ A₂ R^r plants, and moderate amounts in hydrolyzed extracts of silks and tassel glumes (but not anthers) of bz₁ and A₁ a₂ R^r plants. We have found C-glycosylflavones in the hydrolyzed extract of tassel glumes from all stocks tested thus far, but we have not yet detected any in the extracts of leaf sheaths.

Two of these compounds have been tentatively identified as C-glycosylflavones based on luteolin from the following spectral properties and R_f values:

	<u>λ max in MeOH</u>	<u>R_f values in</u>	
		<u>BAW</u>	<u>15% HOAc</u>
#1	256, 271, 349	15	14
#2	258, 269, 350	24	26

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