

tained. A reduction of oil per plant was proportional to the reduction in number of seeds. Significant changes were noted in no other plants. A smaller quantity of fruit from sunflower and of seed from sesame was collected; but due to natural losses of the plant parts, no percentage reduction was calculated. An increase of 5% in flax seed was obtained. Further studies will need to be made to verify this finding and to determine if the number of fruits per plant or the number of seeds in each fruit are increased.

Because the oil of sunflower seed was pooled, no statistically significant differences in the quality of the oils were possible. The iodine value and the saponification value of the sunflower oil were somewhat different from those reported in the literature (12). It is known, however, that the composition of sunflower oil varies according to the locality in which it is grown (13). No significant differences were noted in the linseed oil samples. Significant differences in sesame oil consisted of higher saponification values and lower acid values in oils from plants treated with GA. A higher saponification value was the only significant deviation obtained from castor oils.

Saponification values were consistently higher in the oils from treated plants. The average acid value was consistently lower; however, there was considerable variation between individual castor oil samples and the confidence limits overlapped. The iodine values and the percentages of unsaponifiable matter obtained varied between species of oils and between samples.

DISCUSSION

The reduction in yield in several species of oil bearing plants is not surprising, as a smaller percentage of active constituents has been observed by other workers (4). One author (8) was lead to conclude "that gibberellic acid is of doubtful value in drug plant cultivation." While more studies will need to be made to justify such a broad statement, it does illustrate that hoped-for increases have seldom been obtained. An investigation of proper timing, methods of application, and dosage will need to be conducted.

Morphological changes were either insignificant or absent in some of the treated plants; yet there were changes in the quality of the oils. With more refined methods, slight changes may be detected in the plants used. The choice of economic crops for

investigation with GA need not be limited to those that show a striking growth response.

Oils produced from plants treated with GA differed from the controls in their chemical characteristics. The increased saponification values indicated that the oils from treated plants are composed of shorter chain fatty acids. This characteristic was constant in all the species and samples of oils tested. It is more likely to be a general physiological effect of GA than any other. Acid values tended to be lower, an indication that more of the fatty acids were esterified. The resultant higher ester values would indicate that a greater percentage of glyceryl esters occurred in the oils from plants treated with GA. Other characteristics varied between species. The photosynthetic products which build the fixed oils are produced in the leaves some distance from the place where they are stored. A physiologically abnormal catabolism or transportation or both might have been involved in the plants used.

SUMMARY

Slight changes in the chemical constants of oils from GA-treated plants were observed. Significant changes were seen in sesame and castor oils.

Increased saponification values from all treated plants indicate that shorter chain fatty acids were present in the oils. Acid values tended to be lower, an indication of less free fatty acids. Iodine values and unsaponifiable matter varied among species.

Changes were observed in the quality of oils obtained from plants that had insignificant or no visible morphological differences.

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ERRATA

In the review article titled "Absorption of Implanted Solid Drug" (1), the following corrections should be made:

1. Equation 17 contains the term $(D^0 - kt)$. This term should be replaced by $(D^0r - kt)$.
2. Equation 23 contains the term $2K^2/K^3$. This should be replaced by $2k^2/K^3$.
3. Algebraic manipulation alone will reduce Eq. 29 to 29a, and the discussion in the paragraph following these equations should be interpreted in light of this fact.

(1) Ballard, B. E., and Nelson, E., *THIS JOURNAL*, **51**, 915 (1962).