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Carbohydrate metabolism of the avocado

I. Relations between sugars in leaves during photosynthesis and subsequent dark periods

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Abstract

The sugars of avocado leaves and leaf disks were labeled by photosynthesis in $C^{14}O_2$ during various periods. The label found in the sugars was examined immediately following photosynthesis as well as after a period of respiration under various conditions.

Sucrose was found to be the sugar most rapidly labeled during photosynthesis. Mannoheptulose was formed concurrently with sucrose but at a lower rate. Fructose and perseitol were labeled much more slowly than either sucrose or mannoheptulose during photosynthesis. However, in subsequent dark periods activity continued to accumulate in fructose and perseitol while the activity in sucrose and mannoheptulose was depleted.

These results suggest that both sucrose and mannoheptulose are formed directly from products of the photosynthetic reduction cycle of carbon dioxide. Fructose and perseitol must be secondary products, formed at the expense of sucrose and mannoheptulose and by reactions independent of photosynthesis.

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