This Week's Citation Classic

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Brown A H. Determination of pentose in the presence of large quantities of glucose. *Arch. Biochem.* **11**:269-78, 1946. [Dept. Chemistry (Fels Fund), Univ. Chicago, Chicago, IL]

Glucose interferes with the orcinol reaction for colorimetric measurement of pentose. By measuring light absorption with a Klett colorimeter at two different spectral regions the errors of pentose assay were less than ± 5% even when a 15-fold excess of glucose was present. A graphic procedure simplifies calculation of assay data. [The *SCI*® indicates that this paper has been cited over 535 times since 1961.]

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"I was surprised to learn that one of the least interesting (to me) papers I ever published has become a *'Citation Classic'* . The work was done while I was on a post-doctoral appointment in chemistry at the University of Chicago where I was getting biologically reoriented after some years of World War II research. As a plant physiologist, I had joined a team of chemists to use for photosynthetic research the ^{14}C that the Atomic Energy Commission produced in an atomic reactor and was about to release for civilian use as a biochemical tracer.

"At Chicago I enjoyed one of the most intellectually stimulating periods I have known. We were introduced to photochemistry by James Franck, took lessons on building mica window Geiger counters (then not commercially available) from Willard Libby, and learned about photosynthesis by listening to Eugene Rabinowitch (and from reading the first of his three volume magnum opus, just published).[1] For the first time in years I could talk plant biology with people who 'spoke the language': E.W. Fager, an organic chemist (later to become a marine ecologist), and Hans Gaffron, a biochemist, research colleague, teacher, and friend. While waiting for the paperwork to run its course and provide us with ^{14}C (then at $400/mc !), I picked a minor problem I could pursue without tracer –to inventory the products of 'photoreduction' (CO_2 + $2H_2$ + CH_2O + H_2O) in the same way that James H.C. Smith had done for photosynthesis some years earlier.[2] Pentose measurement posed a special problem due to interference from glucose during colorimetric assay. I solved it by reading with a Klett colorimeter at two different spectral regions to correct for absorption by hexose chromogen. After validating the method on known mixtures and getting respectable agreement with theory, I used it as part of an overall assay of carbohydrate constituents of *Scenedesmus* before and after some hours of photoreduction. Without tracer, the long time needed to accumulate in the organic fractions increments significant by gross analysis unfortunately insured that I could not possibly have demonstrated transient accumulation of a 'first product' of C-assimilation in any particular fraction.

"When I published those not very interesting results I decided to make the pentose assay method a separate paper just in case some pentose researcher might see it and save himself the trouble of reinventing it.[3] Buried in a physiological contribution it probably would have gone unnoticed. In the year after publication I received more reprint requests for that paper than I ever have since for papers that I believe are of substantially greater scientific interest Since the paper has been quoted frequently, it seems to have served its intended purpose Perhaps for some the moral of this story may be: if you value being widely quoted and if your scientific accomplishments fail to attract the attention you think they deserve, publish method papers instead!"

1. **Rabinowitch E I.** *Photosynthesis and related processes.* New York: Interscience, 1945. Vol. I. 599 p.
2. **Smith J H C.** Molecular equivalence of carbohydrates to carbon dioxide in photosynthesis. *Plant Physiol.* **18**:207-23, 1943.
3. **Brown A H.** The carbohydrate constituents of *Scenedesmus* in relation to the assimilation of carbon by photoreduction. *Plant Physiol.* **23**:331-7, 1948.