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Lewis D H & Smith D C. Sugar alcohols (polyols) in fungi and green plants. I. Distribution, physiology and metabolism. *New Phytol.* **66**:143-84, 1967.
[University Department of Agriculture, Oxford University, England]

This review discussed the distribution, physiology, and biochemistry of acyclic sugar alcohols in fungi, algae, lichens, and vascular plants. It drew conclusions about occurrence and quantitative variation, carbohydrate storage, translocation, osmoregulation, enzymology and control of synthesis, and coenzyme regulation and storage of reducing power. [The *SCI*® indicates that this paper has been cited in over 145 publications since 1967, making it among the top most-cited papers ever published in this journal.]

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"It has been my very good fortune to have been advised and inspired by several eminent scientists, most prominent and distinguished among whom have been the late Lord Florey and Jack L. Harley and David C. Smith. The first was president of the Royal Society and provost of Queen's College, Oxford, where, in 1966, I was the Browne Research Fellow; the second, my undergraduate tutor and postgraduate supervisor, has recently retired from the chair of forest science at Oxford; the third was my coauthor. At that time, David held the Royal Society Senior Fellowship at Wadham College, and he is now Sibthorpian professor of rural economy at Oxford and biological secretary of the Royal Society.

"Encouraged by Florey and Jack to go abroad, I spent the middle year of my tenure of the Browne Fellowship at Purdue University, Indiana. During this year, Jack, in whose laboratory I had continued to work, moved to Sheffield and he invited me to join him there when my fellowship terminated, an offer I eagerly accepted. When I returned to Oxford after Jack had left, vultures had already descended on his former empire and equipment had been spirited away! For the remainder of my fellowship, I decided writing would be more profitable than rebuilding an experimental laboratory.

"My postgraduate studies of the carbohydrate metabolism of ectomycorrhizas had parallels with earlier ones by David on that of lichens. In many mutualistic and pathogenic associations, it turned out that, in the heterotroph, mannitol acted as a trapping agent for transferred carbon and other polyols were sometimes the mobile compounds.[1] Always encouraged by Jack to seek wider implications than the specialist nature of our personal research revealed, we resolved jointly to review the involvement of polyols in plant biology. This objective fragmented into two reviews, one the subject of this commentary and the other a methodological adjunct.[2] To acknowledge our debt to reference 3, which had concentrated on microorganisms and animals, we wrote: 'We found Touster and Shaw's article very helpful, and a number of ideas that are developed in detail here originate from their review.' Our paper is still, I think, the only one to have attempted comprehensive coverage of polyol metabolism in all the organisms listed in the abstract. This perhaps explains why it has 'remained on the charts.' References 4-6 cover more restricted or allied aspects.

"The writing of this review cemented a lasting personal and scientific relationship with David, who, with Jack, has remained a towering influence on my career. In succession to David, I am now the executive editor of *New Phytologist* so that, with its editorial board, I am currently responsible for inviting authors to contribute reviews. David and Jack have recently retired from this board—all very inbred perhaps, but I am proud of the associations and will remain deeply indebted both to them and to the journal in which my first review article was published."

1. **Smith D, Muscatine L & Lewis D.** Carbohydrate movement from autotrophs to heterotrophs in parasitic and mutualistic symbiosis. *Biol. Rev.* **44**:17-90, 1969. (Cited 225 times.)
2. **Lewis D H & Smith D C.** Sugar alcohols (polyols) in fungi and green plants. II. Methods of detection and quantitative estimation in plant extracts. *New Phytol.* **66**:185-204, 1967. (Cited 60 times.)
3. **Touster O & Shaw D R D.** Biochemistry of acyclic polyols. *Physiol. Rev.* **42**:181-225, 1962. (Cited 120 times.)
4. **Brimacombe J S & Webber J M.** Alditols and derivatives. (Pigman W & Horton D, eds.) *The carbohydrates: chemistry and biochemistry*. New York: Academic Press, 1972. Vol. 1A, p. 479-518.
5. **Bieleski R L.** Sugar alcohols. (Loewus F A & Tanner W, eds.) *Encyclopedia of plant physiology, new series*. Berlin: Springer-Verlag, 1982. Vol. 13A, p. 158-192.
6. **Lewis D H.** The physiology and metabolism of alditols. (Lewis D H, ed.) *Storage carbohydrates in vascular plants: distribution, physiology and metabolism*. Cambridge, England: Cambridge University Press. In press, 1984.

