

Bohlmann F, Burkhardt T & Zdero C. Naturally occurring acetylenes.

London: Academic Press, 1973. 547 p.

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This book contains our knowledge of naturally occurring acetylenes, which now represent a new large group of natural products. Since the biosynthesis of acetylenes is also elaborated to a wide extent, the arrangement of this book is mainly along biogenetic lines. However, synthesis and chemotaxonomic viewpoints are also covered in detail. [The *SCI*® indicates that this book has been cited in over 485 publications.]

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In our work on the synthesis of β -carotene we came across acetylenic chemistry. At the same time, N.A. Sørensen demonstrated that acetylenes occur in higher plants. We started a synthesis of a highly unsaturated acetylenic hydrocarbon called Centaur X_3 . Since we could not get a sample of the natural product for comparison (which was, at that time, the only way to show the identity of compounds), we had to isolate the hydrocarbon that is present in the widespread cornflower (*Centaurea cyanus*).

There were many other acetylenic compounds, so we started investigating related species for further acetylenes. It turned out that these compounds are widespread, especially in the family of the daisies (Compositae), but they are also present in the umbels (Apiaceae). At the same time, Sir E. Jones and his co-workers in Oxford showed that acetylenes are present in the culture liquids of many fungi. In Oxford and also in Berlin it was soon shown that all these acetylenic compounds are derived from linolic acid.

Careful feeding experiments of labeled compounds allowed us to work out definite biosynthetic pathways for many of these compounds in microorganisms and higher plants. However, one problem, the isolation of the enzyme responsible for the transformation of a cis-double bond to an acetylenic bond, could not be solved; it is still unresolved today.

In 1977 about 650 naturally occurring acetylenes and related compounds were known. Since then, such compounds have been isolated from many other sources, including the carotenoids from algae that are present in very high quantities in the oceans. Accordingly, we can now say that acetylenes are not rare compounds at all.

Since it is usually easy to detect acetylenic compounds by their characteristic UV-spectra, the occurrence of such compounds has been studied by many groups that have used the data in our books.^{1,2} Accordingly, this summary has been frequently cited in the literature concerned with natural products, especially since no other review has been published recently.

1. Mabry T J & Bohlmann F. Summary of the chemistry of the Compositae. (Heywood V H, Harborne J B & Turner B L, eds.) *The biology and chemistry of the Compositae*. London: Academic Press, 1977. Vol. II. p. 1097-104.
2. Bohlmann F & Zdero C. Naturally occurring thiophenes. (Gronowitz S, ed.) *Thiophene and its derivatives*. New York: Wiley, 1985. p. 261-323.