

Book Reviews

The Biochemistry of the Stilbenoids

John Gorham (with contributions from Motoo Tori and Yoshinori Asakawa).

Chapman & Hall, London. 1995.

vii + 262 pp.

Hardback, UK£59.00; ISBN 0-412-55070-9.

This book covers many aspects related to the stilbenoids: a group of natural products that occur in bryophytes, pteridophytes, gymnosperms and angiosperms. The first part of the book deals with their distribution in different taxa of the plant kingdom. Long tables with plant species and isolated stilbenoids are given. Their chemistry is discussed and structural formulae (more than 300) are given in an appendix.

The book continues with the biosynthesis and chemical synthesis. Their biosynthetic pathway is linked to that of the flavonoids. Accordingly, stilbenoids originate from the shikimic acid pathway, and are linked with three acetate units. Methods for the analysis and identification of this class of compounds are presented, among others thin-layer chromatography (TLC), gas chromatography (GC), high-performance liquid chromatography (HPLC), ultraviolet (UV) spectroscopy, nuclear magnetic resonance spectroscopy (NMR), mass spectrometry (MS) and X-ray crystallography.

Further, the biological activity of stilbenoids is discussed. For plants they are of ecological importance by protecting them against pathogens. In addition, many representatives possess antibacterial, antifungal and cytotoxic properties, and may be of interest as leads for the development of new drugs.

The book ends with 34 pages of references (more than 700, including the titles), with recent work to 1994. Most of the published literature on stilbenoids is covered. A species index and a subject index are included in the book.

Each topic is introduced in a way that is understandable for non-experts in the particular field. The book has a pleasant layout and is well edited. It should be of interest for researchers in plant biochemistry, chemotaxonomy and natural product chemistry.

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A Review of *Allium* section *Allium*

Brian Mathew

Royal Botanic Gardens, Kew. 1996.

ix + 176 pp.

Paperback, UK £21.00; ISBN 0-947643-93-1.

This attractively illustrated book is a welcome addition to the knowledge of *Allium*. It has profited

from the advice and, occasionally, assistance of a number of *Allium* experts and so includes chapters on leaf anatomy, cytology and phytochemistry. The author refers to his book as a 'review'; actually it is a near-monography.

Large herbarium collections and living collections were studied, and together with a wide literature study, 114 species in section *Allium* could be distinguished. To some taxonomists, this somewhat surprisingly high number of recognized species results from Mr Mathew's method: applying or admitting uncontrollable, or otherwise known to be variable characters for delimitation. An example is found on p. 61 where the species in Group C are keyed out, and one is obliged to separate *A. stearnianum* from *A. mareoticum* solely guided by a more or less pronounced shade of purple on the (fresh?) petals.

To know whether a specimen to be identified and keyed out belongs in Group C or Group B (p.54) one group-character only is made available: the temporary relative position of the anthers at anthesis. 'Anthers included or only partially exerted' (group C) as against 'Anthers fully exerted or sometimes only slightly so' (Group B). Surely, many a taxonomist wanting to refer a specimen to Group B or Group C will hesitate when obliged to choose between partially exerted and only slightly exerted to fully exerted anthers. Because several species are represented by one or two specimens, or appear to be local endemics, the citation of examined specimens—if not all at least a representative number of specimens—would have helped to clarify the specific limits admitted.

As is noted in the Introduction, knowledge of the taxonomy of *Allium* is in progress by continued new collections and cultivation and experiments (hybridization), complicated by the propagation by bulbils in many species, which allows for controversies and different opinions. Here a number of the latter follow.

1. *A. ascalonicum* L. is a well-described and well-typed name for a Middle-East species. Linnaeus later on misapplied the name for a different species of *Allium*. Mathew rejects it in favour of the later name *A. hierochuntinum* Boiss., but *A. ascalonicum* L. ought to be used in accordance with the Code of Botanical Nomenclature, in order to prevent a persistent source of doubt about the status of both names.

2. *A. mareoticum* Bornm. & Gauba was neotyped, described and illustrated in all specific details by Duyfjes (1976, pp.41,42), but apparently this was overlooked. In Mathew's treatment of *A. stearnianum* (p. 143) all cited characters appear to be identical with those of *A. mareoticum*

and it would seem that it is a later synonym of the latter.

3. *A. porrum* (leek) and *A. kurrat* (kurrat) are retained as species 'for practical reasons'; they are usually considered by other authors as cultivars for taxonomical reasons. It is suggested that *A. longicuspis* Regel might represent flowering garlic (garlic 'never' flowers, it is believed). This possibility, added to the information presented by him (pp. 84–86), may well stimulate further research (see also Duyfjes 1976, pp. 60–62). *A. ampeloprasum* and its taxonomic limits in particular remain uncertain. Its relations to *A. pardoi* Loscos, *A. scaberrimum* Serres, *A. polyanthum* Shultes & Shultes and *A. truncatum* (Feinbr.) Kollmann & D. Zohary—four 'species' adopted by Mathew, and to the non-specialist in *Allium* in any case, only identifiable in a daring mood—are slender.

It may be remarked, by the way, that *A. alibile* A. Rich. (from Ethiopia and Arabia) cannot be distinguished on account of the available data from *A. ampeloprasum*, although it is retained as a species (p. 93). Some recent Ethiopian collections (most likely of *A. ampeloprasum*) cannot clarify this matter convincingly, as is admitted by Mathew.

It is to be noted that 'fully exerted', 'slightly exerted' and 'included' anthers are ascribed as specific characters to *A. alibile* and so one finds oneself obliged to key out *A. alibile* in five different keys or ways. Collectors in Ethiopia, hopefully, will pay special attention to this uncertainty, and possibly the general remark (p.84) that some characters 'might be regarded as generalisations applicable to populations, rather than to selected individuals' might be considered here.

4. The treatment of *A. rotundum* L. (p.99) is poorly documented (its lectotypification (Duyfjes 1973) is not discussed nor cited) and his subdivision of *A. rotundum* into subspecies is difficult as it is based on (in *Allium*) the possibly unstable character of colour

intensity of the tepals. Its occurrence in Africa is very unlikely.

5. A number of subspecies both in *A. sphaerocephalon* L. (pp. 118–120) and *A. curtum* Boiss. & Gaill. (pp. 124–125) are adopted, but the major distinguishing character among them is the colour of the tepals. It is rightly remarked that the subdivision of *A. curtum* is not quite convincing (p. 125). Similarly it is noted (p. 129) that *A. integerrimum* Zahar., a specimen originally collected by Greuter and believed by him to be a 'new' species, is accepted (p. 121) as a species while he declared 'may be in fact inseparable' (from *A. sphaerocephalon*). The four subspecies accepted in *A. guttatum* (the African material in subsp. *sardoum*) are equally doubtful.

It might be asked why, regarding the distinction of these taxa, their separation is adhered to on a single, known-to-be changeable character and why the well-founded and taxonomically sound delimitation of, for example, *A. sphaerocephalon* L. as advanced by Duyfjes (1976, pp. 44–54) was not followed? It can be considered that during the last 25 years many new specimens have been collected and consequently new data and new vistas made accessible.

By publishing a number of seemingly questionable taxa in this carefully written review, special attention is drawn to them. New interest in the taxonomy of the genus *Allium* will certainly be generated by this fine study.

REFERENCES

- Duyfjes, B.E.E. (1973): Typification of 23 *Allium* species described by Linnaeus and possibly occurring in Africa. *Taxon* 22 (1).
 Duyfjes, B.E.E. (1976): A revision of the genus *Allium* L. (Liliaceae) in Africa. *Med. L.H. Wageningen* 76 (11).

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