

Book review

Bioactive Organosilicon Compounds; by R. Tacke, U. Wannagat and M.G. Voronkov, Springer-Verlag, Berlin, Heidelberg, New York, 1979, 146 pages, DM 88 (Topics in Current Chemistry, No. 84)

This issue (No. 84) of Topics in Current Chemistry contains two reviews. The first on "Syntheses and Properties of Bioactive Organosilicon Compounds", is by R. Tacke and U. Wannagat, and is 75 pages long, and contains 132 references. The second, on "Biological Activity of Silatranes" is by M.G. Voronkov, and is 59 pages long and contains 99 references. There is no interaction between the two reviews, so that in the first review the section on silatranes makes no reference to the second, although the reader is referred to earlier surveys by Voronkov.

The Tacke—Wannagat review seems to be a comprehensive listing of studies of the biological activity of organosilicon compounds, especially of those based on introduction of silicon in place of carbon in organic compounds of established biological activity. The latter compounds are referred to as "sila-pharmaca", a term which the authors also use for the special field of organosilicon chemistry to which they give rise. The account is essentially a presentation of brief abstracts of each investigation described, with no attempt to assess or evaluate. It leaves the impression that "sila-pharmaca", while sometimes superior in certain respects to the organic compounds on which they are based, have not yet found any useful application. However, the simple organosilicon compound $\text{Ph}_2\text{Si}(\text{OH})_2$ shows promising anticonvulsant activity, while *cis*-2,6-diphenylhexamethylcyclotetrasiloxane has been used with success in treatment of cancer of the prostate in humans. Remarkable curative effects have also been reported for derivatives of $\text{MeSi}(\text{OH})_3$ and $\text{Me}_2\text{Si}(\text{OH})_2$.

The review by Voronkov is a welcome survey of the many studies on the biological effects of silatranes, mainly carried out in the U.S.S.R. In contrast with some of the earlier reviews of the subject, the identities and doses of the silatranes used are specified, and the results factually set out. The effects of the silatranes can thus be seen to be less dramatic than earlier, less detailed reviews might have implied. The rate of healing of fairly minor skin wounds is significantly increased by 1-chloromethylsilatrane, in the U.S.S.R. there is a good supply of suitable injuries from falls in cycle racing. The same compound increases the rate of growth of hair in animals (as does 1-isopropoxysilatrane), and is very effective for treatment of premature baldness in young people. 1-Ethoxy- and 1-methoxy-silatrane markedly inhibit the growth of a range of tumours in animals. Hens fed with 1-chloromethylsilatrane put on extra weight without any harmful side effects, and their production of eggs is increased by up to 31%. The output of silk worms (rather delightfully, by printer's error, referred to as "sil-productivity") and the size and number of bees in a colony are increased by 1-ethoxysilatrane, while the yield of tomatoes from each bush can be increased

1.5–3 fold by the 1-chloromethyl compound and certain other silatranes. In contrast, some silatranes are highly toxic, and *p*-chlorophenylsilatrane has been used in the U.S.A. as a rodenticide since 1971. It will be of great interest to see whether Prof. Voronkov is proved right in his view that the silatranes “will undoubtedly find a wide application in therapy, fur-farming, poultry breeding, plant growing, and cultivation of useful insects and microorganisms”.

This is a timely and interesting monograph. It is a pity that the editing was not of a higher standard; the quality of the translation is especially bad in the first review, although the meaning can always be worked out. It is difficult to understand why publishers will not go to the slight trouble and expense of having the English of translated papers corrected by appropriate English or American scientists. In this case such editing would also no doubt have removed the absurdity that the name Voronkov is rendered variously as Voronkov, Voronkow, Woronkov, and Woronkow, the form used on the cover of the book even differing from that in the heading of Prof. Voronkov’s review.

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