

Comments and Communications

Hydrolysis of Steroid Esters on Activated Alumina

R. H. Levin, *et al.*, in a paper read before the meeting of the American Chemical Society, held in New York City on September 17, 1947, described the deformylation of the 3-formoxide derivatives of steroids when chromatographed on activated alumina (Fisher). This appears to be a special case of a more general hydrolytic splitting undergone by 3-hydroxy-steroid esters when passed through activated alumina.

A report from this laboratory (W. Dasler and C. D. Bauer. *J. biol. Chem.*, 1947, 167, 581) has previously pointed out that steroid-3,5-dinitrobenzoates are partially hydrolyzed when chromatographed on activated alumina (Alorco). Thus, free calciferol could invariably be isolated from the eluates of alumina columns upon which calciferyl-3,5-dinitrobenzoate had been adsorbed.

W. C. Hess (*J. lab. clin. Med.*, 1947, 32, 1163) has reported that when known mixtures of cholesterol and cholesteryl stearate were chromatographed on alumina (according to Brockman, Merck) prior to analysis, the values for free cholesterol tended to be about 5% high, and those for esterified cholesterol, about 5% low. Although other explanations can be advanced to account for these results, it seems not unlikely that this may be another instance of the same phenomenon, viz., the hydrolytic splitting of the steroid ester by the adsorbent.

It seems likely that partial hydrolysis of steroid esters during chromatography has been frequently encountered without being recognized. Some of our more recent work seems to indicate that the *p*-phenylazobenzoates of sterols are more resistant to hydrolysis than some of the other esters when chromatographed on activated alumina.

The hydrolytic splitting of 3-formoxide derivatives of steroids reported by Levin, *et al.* is noteworthy in that the deformylation in the 3- position was apparently complete, whereas formoxide residues at other positions in the molecule were unaffected.

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Crayfish in Southern Nevada

Faxon (*Mem. Mus. comp. Zool.*, 1885, 10(4), 178), in his Revision of the Astacidae, stated that "the genus *Cambarus* [= *Cambarinae*] ranges from Lake Winnipeg to Cuba and Guatemala, from New Brunswick to Wyoming Territory (in Mexico to the Pacific Ocean)." Since that time there have been, to our knowledge, no published records which extend appreciably the known range of the *Cambarinae*. In the United States the most western

records are those from Texas, New Mexico, Colorado, and Wyoming [*Procambarus simulans* (Faxon) from Mexico and Chaves Counties, New Mexico, and Boulder County, Colorado; *P. clarkii* (Girard) from Kinney County, Texas; and *Orconectes virilis* (Hagen) from Laramie County, Wyoming].

In August 1944 the junior author collected several crayfish in the Las Vegas River at Las Vegas, Nevada, and forwarded them to the senior author for identification. Upon comparing these with specimens of *Procambarus clarkii* from Texas and Louisiana we find that none of the variations exhibited are greater than those present in a single collection of this species from any given locality in either of these states.

It seems improbable that this species has arrived in the Las Vegas River by normal migration; however, all attempts to find out when and by whom it was introduced have proved futile.

Several years ago Waldo L. Schmitt, of the U. S. National Museum, informed us that *P. clarkii* had been introduced with success in the Santa Rosa, California, region, and we strongly suspect that their presence in the Las Vegas River in numbers may be explained by their finding here, after introduction, another congenial habitat.

It is hoped that we will be able to determine if and when crayfish were introduced in the Las Vegas River.

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The Effect of Rutin on Anaphylactic and Histamine Shock

Raiman, Later, and Necheles (*Science*, October 17, 1947, p. 368) have reported that rutin, a flavonol derivative, protected guinea pigs from anaphylactic shock, but afforded no protection against histamine shock. These authors concluded, therefore, that liberated histamine is not the direct cause of anaphylactic shock, or that rutin prevents liberation of histamine rather than protecting the sensitized animal against liberated histamine.

These conclusions would not be justified if it could be shown that flavonols or their derivatives protect against histamine shock. Such evidence was presented earlier in 1947 by Wilson, Mortarotti, and DeEds (*J. Pharm. exp. Therap.*, 1947, 90, 120), who showed that under carefully controlled conditions rutin had a slight, though definite, protective action against histamine shock. Still earlier, Parrot and Richet (*C. R. Soc. Biol. Paris*, 1945, 139, 1072) published data showing that death from histamine could be prevented by compounds closely related to flavonols. These authors demonstrated an increased sensitivity to histamine in scorbutic guinea pigs and reported that administration of a mixture of *d*-catechin isomers counteracted this increased sensitivity.

To permit demonstration of the protective action of rutin we found that the amount of intravenously injected histamine was critical. An approximately LD₅₀ dose of 0.25 mg of histamine base/kg of body weight proved to be satisfactory. Raiman, Later, and Necheles used a mini-

mal lethal dose of histamine which they did not define in terms of milligrams per kilogram of body weight, but which killed all of their control animals. Under these conditions a protective action of rutin against histamine could not have been demonstrated if their animals, in other respects, were comparable to ours. The dose of rutin which they administered was considerably smaller than that used by us. However, in our study, variation in rutin dosage was not attempted, and a smaller dose might have protected the animals as well as the amount actually used.

Raiman, *et al.* stated that one animal, given rutin 1 hr before the shocking dose of serum, was not protected. This is not surprising, although it is only a single example. We demonstrated that 10 mg of rutin/animal was not sufficient to protect against histamine shock if the rutin was given an hour before the histamine. It might be expected, therefore, that 2 mg/animal would prove to be infective after this length of time.

Although we believe that rutin acts in an indirect manner and is therefore not a true antihistamine drug, it does protect against histamine shock. The evidence given by Hiramatsu (*Jap. J. Derm. Urol.*, 1941, 49, 304) and by Raiman, Later, and Necheles indicates that it also protects against anaphylactic shock and strengthens, rather than weakens, the theory that the symptoms of anaphylaxis are produced by liberated histamine. Neither the contrary thesis suggested by Raiman, *et al.* nor their alternative that rutin prevents liberation of histamine by the antigen receives any support from the above-mentioned findings. The close relationship of histamine to anaphylactic shock is well illustrated by the following statement from a recent review of antihistamine compounds by Loew (*Physiol. Rev.*, 1947, 27, 562): "All antihistamine drugs which so effectively antagonize the bronchioconstrictive action of histamine are capable of diminishing the severity of anaphylaxis in the guinea pig, in which animal bronchioconstriction is the prominent feature of anaphylaxis."

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The Geological Society of America: A Proposed Section on Geomorphology and Glacial Geology

On December 31, 1947, at Chateau Laurier, Ottawa, about 35 fellows of the Geological Society of America met to discuss the desirability of organizing a Section on Geomorphology and Glacial Geology within the structure of the Society. It was voted that membership of the Society be informed of this proposal, their opinions canvassed, and the results published in the Interim Proceedings of the Society.

The proposed Section would promote the development of geomorphology and glacial geology through the organization of technical sessions and symposia at the Society's meetings. The Section might engage in such other functions as criticism of geomorphic manuscripts submitted to the Society for publication, establishment and operation

of a journal or bulletin, encouragement and support of research projects, development of professional opportunities in applied geomorphology, preparation of a directory of geomorphologists, and the translation of important foreign papers.

Arthur N. Strahler, of Columbia University, was given the responsibility of canvassing fellows and members of the Society, to determine their reaction to the organization of such a section. In addition, a committee consisting of M. M. Leighton, Illinois State Geologist, chairman, and Drs. Strahler and Koons was appointed to cooperate with the secretary of the Society in arranging a program dealing with geomorphology, Pleistocene geology, and related subjects at the New York meeting in November 1948.

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FIAT Review of German Science

The readers of *Science* will be interested to know that the first volumes of the FIAT Review of German Science, 1939-1946, have begun to appear. According to T. W. Schaeffer, of the Research Control Branch, Office of Military Government for Wuertemberg-Baden, the following volumes have already appeared and are distributed by the Office of Technical Services in the Department of Commerce according to recommendations of the Library of Congress: *Biochemistry*, Vol. I (three more volumes to appear, edited by Richard Kuhn); *Physics of solids*, Vol. I (one more volume to appear, edited by G. Joos); *Radiology* (diagnostic and therapeutic), H. Holthausen; *Bacteriology and immunology*, H. Schmidt; *Virus diseases of man*, R. Bieling and H. Heinlein; and *Anatomy, histology, and embryology*, P. Stöhr.

The whole project is to contain 16 volumes of physics, 24 of chemistry, 7 of mathematics, 27 of different branches of medicine, 4 of biology, and 8 of science of the earth. However, according to latest news there are financial difficulties for the military government in bringing this work to conclusion. Moreover, an edition identical with that edited by the military government is in preparation under German auspices. This is to appear under the title *Naturforschung und Medizin in Deutschland, 1939-1946*, and, so far as possible, will be printed from the same plates. (The same volumes of this edition have already appeared as in the allied edition.)

Judging from the volume on biochemistry, which the writer has received, it would seem desirable that efforts to publish at least the larger part of the manuscripts should be continued. The material published in this volume was only in part printed in German science journals during the war; a great deal is new. This volume contains reviews on fat and fat metabolism, by K. Thomas and G. Weitzel, and on inert soaps, by D. Jerchel; four different chapters on natural pigments, mostly from the school of the late Hans Fischer, including posthumous material; and three original papers from O. Warburg, nearly identical with those published in his recent book, *Heavy metals as active groups of enzymes*.

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