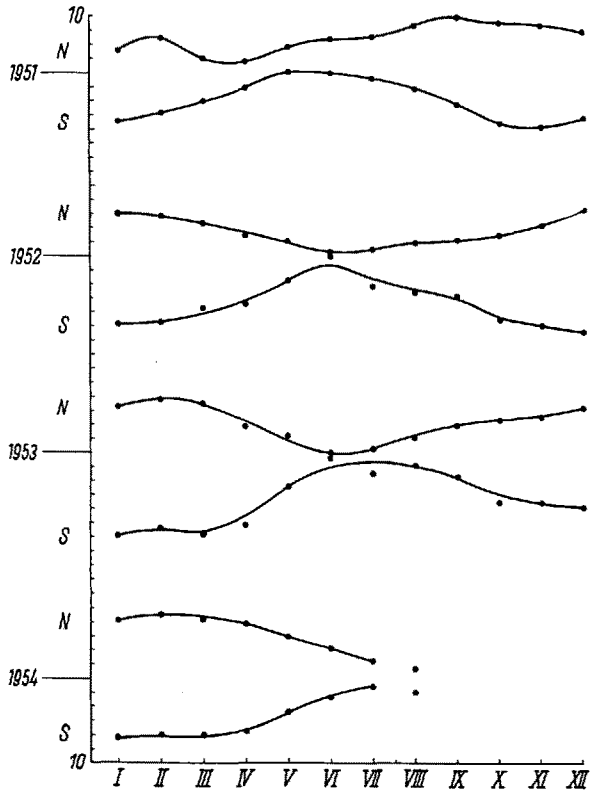
gemässen Veränderlichkeit der Form der Kurven selbst, ganz allgemein Spiegelbilder der in der Nordhemisphäre beobachteten Jahreskurven sind. Es dürfte wohl kaum



einen deutlicheren Beweis für die Existenz der «Lorentz-Kontraktion» geben.

L. COURVOISIER †

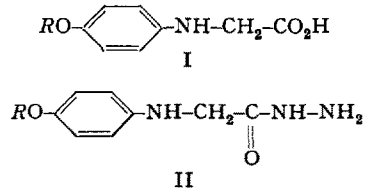
Riehen bei Basel (11. Februar 1957), im Oktober 1955.

Summary

In addition to his paper[2], which contains the yearly curves 1948, 1949, 1950 of relative corrections of Quarz-clocks on northern and southern stations, the author gives here the four new curves for 1951, 1952, 1953, 1954 with the results of the observations in Greenwich, Potsdam and Buenos Aires (geod. and naval.). The theoretical statement that the curves at southern stations must agree with the reflexes of those on northern stations has now still better foundations than before and thus the existence of the «Lorentz-contraction» is still more clearly proved.

Sur l'activité tuberculostatique des N-arylglycines *para*-substituées

Récemment, BERSCH et DÖPP[1] ont montré que certaines N-arylglycines *para*-substituées possèdent une activité tuberculostatique considérable vis-à-vis de leur souche de bacilles tuberculeux; ainsi, la N-(*p*-éthoxyphényl)-glycine (I; $R = C_2H_5$) montre une action inhibitrice aux concentrations de $^1/_{200\,000}$e en milieu de Dubos, et à des concentrations inférieures à 10^{-6} en milieu de Sauton, et la N-(*p*-*n*-butoxyphényl)glycine (I; $R = n\text{-}C_4H_9$) accuse



I

II

une activité tuberculostatique encore plus élevée.

Afin d'étudier les relations entre activité tuberculostatique et structure moléculaire dans cette série, nous avons examiné le pouvoir inhibiteur d'une série de N-arylglycines nouvelles ou déjà connues sur la croissance de *Mycobacterium tuberculosis var. hominis* (souche H 37 RVD). Le milieu utilisé est celui de Dubos (au tween 80 et à la fraction albuminique V de COHEN), l'inoculum correspondant à 0,01 mg de bacilles en poids humide pour 5 cm³ de milieu de culture; l'inhibition de la croissance est mesurée par opacimétrie à l'aide de l'électrophotomètre de Dognon, la durée d'incubation étant de 12 jours. Les résultats sont consignés dans le tableau suivant:

Substance	Activité à 10^{-5}
N-*p*-anisylglycine	–
N-*o*-éthoxyphénylglycine	–
N-*p*-éthoxyphénylglycine	–
N-(4-*n*-propoxyphényl)glycine	+
N-(4-*n*-butoxyphényl)glycine	+
N-(4-*n*-amyloxyphényl)glycine	+
N-(4-isoamyloxyphényl)glycine	+
N-(4-*n*-heptyloxyphényl)glycine	+
N-(4-éthylphényl)glycine	–
N-(4-*n*-propylphényl)glycine	–
N-(4-fluorophényl)glycine	–
N-(4-chlorophényl)glycine	–

En ce qui concerne les relations entre structure chimique et pouvoir tuberculostatique, l'influence favorable des radicaux alkyloxy supérieurs est analogue à ce qu'on avait déjà constaté dans le cas des thiocarbanilides 4,4'-disubstitués[2]. D'autre part, la conversion des N-arylglycines en hydrazides correspondants (II) détruit l'activité tuberculostatique à la concentration de 10^{-5}; c'est aussi le cas pour les 1-acyl-4-arylthiosemicarbazides préparées en faisant agir des isothiocyanates d'aryles sur les hydrazides (II).

Au cours d'expérience *in vivo*, les N-(*p*-alkyloxyphényl)glycines ont montré une toxicité tellement prononcée qu'elles ne semblent pas devoir présenter d'intérêt thérapeutique.

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N. B. TIEN, J. M. GAZAVE,
J. PILLOT et Mlle G. DUFRAISSE

Institut du Radium de l'Université de Paris, le 4 janvier 1957.

[1] H. W. BERSCH et W. DÖPP, Arzneimittelforschung *5*, 183, 335 (1955).

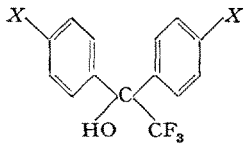
[2] R. L. MAYER, P. C. EISMAN et E. A. KONOPKA, Proc. Soc. exp. Biol. Med. *82*, 769 (1953). – N. P. BUU-HOI et N. D. XUONG, C. r. Acad. Sci. *237*, 498 (1953).

Summary

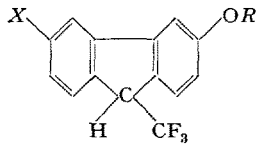
Several compounds belonging to the group of *para*-substituted N-arylglycines have been found to exhibit pronounced tuberculostatic activity *in vitro*, but are too toxic for practical application. The relationship between chemical structure and activity is similar to that observed in the group of thiocarbanilides.

A Cycloisomerization Reaction of Di-(*p*-halogenophenyl)-trifluoromethyl-carbinols

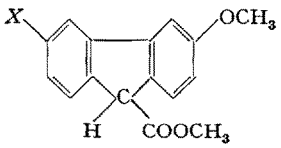
Di-(*p*-halogenophenyl)-trifluoromethyl-carbinols (I, X = halogen)[1] dissolve in concentrated sulphuric acid with an intensely purple colour (λ_{max} = 570–580 mμ) which changes rapidly to orange (λ_{max} = 495 mμ); this change is accompanied by formation of the corresponding hydrohalogenic acid, HX. When the orange solution is poured into water, III (X = halogen, R = H; m.p. 192–193°) is formed. When methyl alcohol is employed instead of water, the methyl ether II is obtained. In a similar cyclodehydration reaction benzilic acid is converted by aluminium chloride into fluorene-9-carboxylic acid[2].



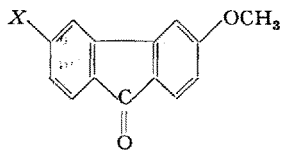
I



II $R = CH_3$
III $R = H$

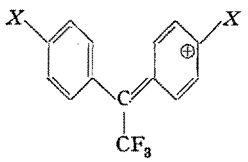


IV

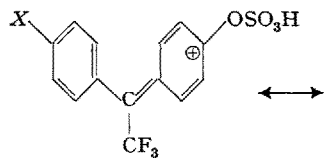


V

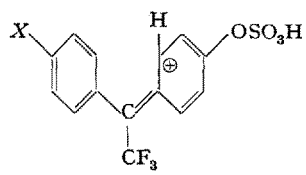
The structure of II was proven as follows: the trifluoromethyl group is converted easily by methanolic alkali to a carbomethoxy group (IV; m.p.129–130°). Oxidation of IV with alkaline hydrogen peroxide gave a yellow ketone $C_{14}H_9ClO_2$ (m.p. 181–182°), which was shown to be 3-methoxy-6-chlorofluorenone (V) by an unambiguous synthesis, starting from 4-chloro-anthranilic acid and anisole.



VI



VII



VIII

The following mechanism for the formation of II from I (X = Cl) appears reasonable. In the carbonium ion VI which is formed when I is dissolved in concentrated sulphuric acid, one of the halogen atoms is non-aromatic and reacts with the acid to VII⟷VIII. This is cyclized with elimination of a proton; the product reacts with methanol or water to give II or III, respectively.

S. COHEN and A. KALUSZYNER

Research Laboratories, Medical Corps, Israel Defence Forces, January 22, 1957.

Résumé

Une solution de di-(*p*-chlorophényl)-trifluorométhyl-carbinol dans l'acide sulfurique concentré, diluée à l'eau ou au méthanol, donne naissance à du chloro-3-hydroxy-(ou méthoxy-)-6-trifluorométhyl-9 fluorène. Le composé méthoxylé, après l'alcoolyse alcaline du groupement $-CF_3$, a été dégradé au fluorénone correspondant, dont la synthèse a été realisée indépendamment.

Quantitative Determination of Bone Minerals from Roentgenograms

Densitometric measurements of radiograms have been much used to estimate the mineral content of bones[1] However, the apparatus required is expensive and complicated and the technique is tedious. Moreover, because the materials which absorb roentgen rays are not randomly distributed, subjective judgement plays an important role in the selection of the areas to be measured. Besides the danger of subjective bias, the uneven distribution of minerals renders the interpretation of the data obtained by density measurements rather difficult, as has been shown in connection with histological sections[2].

For obviating the distribution error, ORNSTEIN[3] described a new photographic method. A specimen to be examined was photographed. The emulsion was developed to produce a γ value = 1. A positive print was then made using a photographic enlarger. The positive image was developed to produce a γ value = 1. The images of individual nuclei were cut out of the film, and the amount of silver per image was determined. ORNSTEIN stated that the use of silver estimation method in film blackening measurements might be at least as accurate as the densitometric scanning methods. Moreover, it is faster and requires fairly simple and inexpensive apparatus.

Theoretically the same method could be expected to apply equally well to quantitative roentgenological studies of bones[4]. ORNSTEIN's method has been modified

[1] E. D. BERGMANN, A. S. TAHORI, A. KALUSZYNER, and S. REUTER, Nature *176*, 266 (1955). – A. KALUSZYNER, S. REUTER, and E. D. BERGMANN, J. Amer. chem. Soc. *77*, 4146 (1955).

[2] D. VORLAENDER, Ber. dtsch. chem. Ges. *44*, 2467 (1911).

[1] W. MC FARLAND, Science *119*, 810 (1954).

[2] D. GLICK, A. ENGSTRÖM, and B. G. MALMSTRÖM, Science *114*, 253 (1951). – O. ERÄNKÖ and J. KIHLBERG, *Quantitative methods in histology and microscopy histochemistry* (S. Karger, Basel and New York; Little, Brown & Co., Boston and Toronto 1955).

[3] L. ORNSTEIN, J. Lab. Invest. *1*, 250 (1952).

[4] I am grateful to Prof. O. ERÄNKÖ from the Department of Anatomy, University of Helsinki, for suggesting the use of silver analysis.