The test-drugs in capsule were orally given to dogs simultaneously with the urate-injection, or at the time of the maximum response. The results are summarized in Fig. 3 and 4. A dosage of 50 mg/kg of acetylsalicylic acid inhibited greatly the onset of pain when simultaneously given, while an initial promotion of pain-relief followed by rapid loss of the effect was observed when administered at the time of the maximum response. Aminopyrine in a dose of 25 mg/kg demonstrated an inhibition, similarly to acetylsalicylic acid, against the established pain. Phenylbutazone and aluminium salt of flufenamic acid,[4] together in a dose of 12.5 mg/kg, prevented and reversed effectively the urate-induced pain. The dosage levels of all the drugs tested here are in the range of clinical use.

The previous authors[3] described that acetylsalicylic acid, even in an oral dose of 150 mg/kg, was ineffective in this gouty arthritis when the overall inflammatory symptoms were apparently evaluated by the scoring method. The present study showed that the compound was sufficiently effective in such small doses as clinically used, probably because of limiting the point of evaluation to the analgesic efficacy. The method used here is simple, sensitive and reproducible for the objective evaluation of analgesic efficacy of non-steroidal anti-inflammatory drugs in dog urate synovitis.

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[4] T. Seki and Y. Watanabe, U.S. Pat., 3409 655 (1968).

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UDC 547.551.42.04

C-C Bond Fission in Carboxamide. Intermediacy of Phenylcarbamate Ion in the Alkaline Hydrolysis of Trichloroacetanilide

In the alkaline hydrolysis of anilides no one has considered the possibility of C-C bond fission; this is probably because C-N bond fission is widely accepted, and one of the final products in both C-N and C-C bond fission is an aniline. Eriksson and Holst, therefore, did not describe about C-C bond fission at all in their paper reporting the alkaline hydrolysis of trichloroacetanilide, though they noticed a distinct odour of phenylisocyanide.[1] Previously we reported a novel reaction pathway for alkaline hydrolysis of α-nitroisobutyramide, that is, C-C bond fission besides the usual C-N bond fission,[2] but it was considered rather special case for the compound. If hydrolysis of trichloroacetanilide involves C-C bond fission just as that of α-nitroisobutyramide, phenylcarbamate ion and chloroform will be produced in the first step, and then the former will decompose to aniline, as shown in the schemes. As chloroform reacts with aniline in alkaline solution to give phenylisocyanide and chloride ion, the formation of these compounds may be explained on the basis of the following schemes.

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[1] S.O. Eriksson and C. Holst, *Acta Chem. Scand.*, **20**, 1892 (1966).
[2] M. Masui, H. Sayo, H. Ohmori and T. Minami, *Chem. Commun.*, **1969**, 404.

$$C_6H_5NHCOCCl_3 + OH^- \xrightarrow{\text{C-C bond fission}} C_6H_5NHCOO^- + CHCl_3 \quad (1)$$

$$C_6H_5NHCOCCl_3 + OH^- \xrightarrow{\text{C-N bond fission}} C_6H_5NH_2 + CCl_3COO^- \quad (2)$$

$$C_6H_5NHCOO^- + H^+ \longrightarrow C_6H_5NH_2 + CO_2 \quad (3)$$

$$C_6H_5NH_2 + CHCl_3 + 3OH^- \longrightarrow C_6H_5NC + 3Cl^- + 3H_2O \quad (4)$$

The amount of phenylcarbamate ion and of aniline formed were determined on separate aliquot of the reaction mixture by the method of Christenson.[3] The rate of the decomposition of the anilide (in 10% aqueous dioxane containing 0.01 to 1.0 M sodium hydroxide at 50°) followed by measuring the decrease in absorption at 248 mμ was faster than that of the formation of aniline. The concentration of phenylcarbamate ion attained a maximum during the reaction (Fig. 1). This may indicate the occurrence of reaction 1 and can explain reaction 3 and 4. Really the mixture of chloroform and phenylcarbamate ion produced from phenylisocyanate in aqueous solution gave phenylisocyanide.

In order to obtain the ratio of C-C bond fission to C-N bond fission, which can be derived from the respective rate constant of reaction 1 and 2, and to confirm the reaction process more definitely, further kinetic study is in progress.

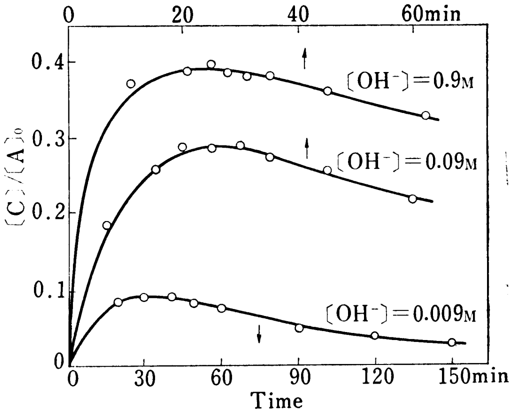

Fig. 1. Change in Concentration of Phenylcarbamate Ion during the Hydrolysis of Trichloroacetanilide

[C] represents the conentration of phenylcarbamate ion and $[A]_0$ represents the initial concentration of trichloroacetanilide used.

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[3] I. Christenson, *Acta Chem. Scand.*, **18**, 904 (1964).

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Structure of Erybidine, a New Alkaloid from *Erythrina xbidwilli* LINDL.

In a previous communication,[1] we reported the structure determination of a new Erythrina alkaloid, erythrinine (I), which was isolated from the leaves of *Erythrina xbidwilli* LINDL.[2] (Leguminosae). Further, we explored the alkaloid constituents of the same plant material

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[1] K. Ito, H. Furukawa, and H. Tanaka, *Chem. Commun.*, **1970**, 1076.

[2] We revised the assignment of the plant material which we described as *Erythrina indica* LAM. in the previous paper.[1]