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Mini Review on Research of T.W. Hermann as an Honorable Editor

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Mini Review

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Introduction

I have initiated my research at the Department of Pharmaceutical Chemistry of Poznan University of Medical Sciences in 1960 on stability of drugs. According to my knowledge at that time I have been the first to discover dimethyl amine as a degradation product of aminophenazone aqueous solution 1:20 used in drug stores to prepare its liquid formulations [1]. Nowadays, that drug is removed from the list to be used in human medicine, because of a cancerous effect of its metabolite. Dimethylamine formed in the above aminophenazone aqueous solution becoming brownish yellow can cause marked irritation of skin, eyes, upper respiratory tract with conjunctivitis, sore throat, and coughing.

Later on I have spent a considerable time to study photo degradation processes involved on an instability of 2% papaverine hydrochloride injection solution, which on ageing is yellowish and even brownish [2]. I have isolated and developed the chemical structure (with help of Dr. U. Girreser of Ch. A. University of Kiel, Germany) of the compound which caused the brown color of the above degraded solution. The brown compound is 2,3,9,10-tetramethoxy-12-oxo-12H-indolo[2,1-a] isoquinolinium chloride [3], whose cytotoxic behavior has been later discovered. I have also discovered another papaverine oxidation product of cytotoxic activity too [4], which was identified by us with 6a,12a-diazadiobenzo-[a,g] fluorenylium chloride [5]. These compounds were tested as eventual antitumor drugs. Stability investigations of papaverine injection solutions let me propose its stable formulation procedures. These require anaerobic conditions to seal the ampoules of suitable color with a suitable antioxidant dissolved in the solution. Methyl 4-hydroxybenzoate was found as the best UV radiation-protective agent [6].

On my postdoctoral fellowship at the College of Pharmacy University of Florida in Gainesville with graduate research professor E.R. Garrett I have learnt theoretical bases of kinetics and pharmacokinetics of drugs. The so-called log k – pH profile was used to develop mechanism of solvolysis of different drugs. It is worthwhile to mention at least four significant publications [7-10].

The main topic of my research as the head of the Department of Physical Pharmacy and Pharmacokinetics since 1980 to 2007 was pharmacokinetics, therapeutic drug monitoring and bioavailability of drugs [11-14]. In order to solve pharmacokinetic differential equations one should be familiar with the integration techniques. However, the Laplace transform enables complex rate expressions to be manipulated easily by conventional algebraic techniques. Unfortunately, it is true only in the case of an open-one compartment body model [15]. With respect to two-compartment body model the resulting complicated transforms may be found only in an extensive table of Laplace transforms. Therefore, it is easier to use a general partial fraction theorem for obtaining inverse Laplace transforms [16].

It is also not reasonable to forget to mention our publications on rationale design in the production of pharmaceutical formulations [17-19].

It is my belief that my long-lasting research experience can be a good source of knowledge for my new position as an honorable editor.

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