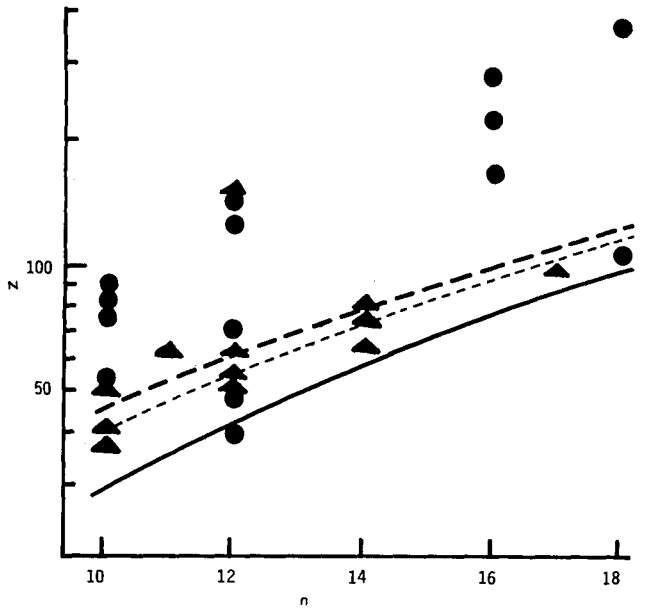

Figure 1—*Aggregation numbers* (z) *of surfactants* versus *the number* (n) *of carbon atoms in the normal alkyl moiety. Key:* ▲, *ionic surfactants;* ●, *nonionic surfactants;* —, *Eq. 2;* – –, *Eq. 5; and* - - -, *values for sodium alkyl sulfates determined using Tartar's calculations. The points below each of the lines are consistent with spherical micelles. (This graph was made from a Xerox enlargement of Fig. 1 of* Reference 1.)

molecule for surfactants such as sodium dodecyl sulfate at the air–water interface, this was felt to be unlikely because of the large hydrocarbon area that would be exposed to the aqueous solution. These large values for area per molecule, however, are in good agreement with values obtained for pure surfactants at their point of maximum adsorption at the air–water or oil–water interface (50–70 Å^2) (4–8). Limiting surface areas approaching closest packing would only be attained when significant external force is applied to overcome the electrical repulsion, hydration, and counter-ion penetration of the polar groups. Indeed, determination of surface potentials of micelles by acid–base titration (9, 10) and by electrophoresis (11) give charge densities and, hence, molecular areas which are similar to saturation adsorption values. In fact, surface potential determinations combined with a spherical micelle model have enabled the calculation of micelle weights in agreement with independent experimentally determined values (10).

In conclusion, the exact shape of micelles is still an open question, but, in general, arguments against spherical micelles presented earlier (1) do not seem valid. Until more definitive evidence is available, a spherical or near-spherical micelle model can be considered useful in the estimation of molecular area and other micelle dimensions. This is especially true for single alkyl chain ionic surfactants, where independent evidence such as light scattering and hydrodynamic data are consistent with a spherical micelle.

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GEORGE ZOGRAFI
College of Pharmacy
University of Michigan
Ann Arbor, MI 48104

SAMUEL H. YALKOWSKY▲
The Upjohn Company
Kalamazoo, MI 49001

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▲ To whom inquiries should be directed.

In Vitro Binding of Pentylenetetrazol to Plasma Proteins

Keyphrases ☐ Pentylenetetrazol—*in vitro* binding to plasma proteins, GLC analysis, rabbits ☐ Drug–protein plasma binding, *in vitro*—pentylenetetrazol, rabbits ☐ GLC—analysis, pentylenetetrazol binding to rabbit plasma proteins

Sir:

Pentylenetetrazol has been used extensively in clinical medicine and pharmacology for its CNS stimulating actions. For this reason, it is pertinent to study the distribution and factors influencing the drug's rate of metabolism and elimination. The fact that many conflicting and incomplete conclusions have been postulated about pentylenetetrazol's fate in the body (1, 2) illustrates the need for more investigations into some of its physiochemical parameters, among which is its binding behavior to plasma proteins.

The possibility of pentylenetetrazol being bound to plasma proteins was discovered in this laboratory during a series of studies with the drug. No data concerning binding of pentylenetetrazol have been reported in the literature. It, therefore, became necessary to perform some preliminary *in vitro* binding studies with pentylenetetrazol.

Equilibrium dialysis conditions were used for determining the fraction of pentylenetetrazol bound to plasma proteins (3). A mixture of 5.0 ml. of rabbit whole plasma[1], 1 ml. of pH 7.4 0.067 *M* Sorensen buffer, and 0.1 ml. of a standard pentylenetetrazol solution was placed in cellophane dialysis bags. The bags were incubated at 37° for 36 hr. in 17 ml. of Sorensen buffer con-

[1] New Zealand white male rabbits from Cherokee Labs, Atlanta, Ga.

Table I—*In Vitro* Binding of Pentylenetetrazol to Plasma Protein

Protein	Equilibrium Concentration of Pentylenetetrazol, mg. %	Bound, %
Rabbit whole	16.6	8.9
plasma	166.0	9.0

tained in 30-ml. beakers covered with parafilm. Control samples were run simultaneously with the samples. An extract of the outside aqueous phase was quantitatively determined for protein-free pentylenetetrazol by GC analysis using a flame-ionization detector and a 5% Carbowax 20 M[2] on Chromosorb W column (4).

The results of the binding studies (Table I) indicated that a small fraction of pentylenetetrazol was bound to rabbit plasma proteins at the concentrations used. The low equilibrium concentrations of pentylenetetrazol were selected on the basis of an *in vivo* study performed in conjunction with the previously mentioned work (4).

The importance of correlating species differences to variation in percent binding of a drug to plasma proteins can not be ignored (5–7). It has also been shown that binding data of a drug reported from one species cannot be transferred to other species (8).

In summary, our preliminary data indicated that pentylenetetrazol is possibly bound to plasma proteins in some animals. The entire binding behavior of pentylenetetrazol and related drugs is important enough to deserve further investigation.

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J. T. Stewart▲
J. L. Story
Department of Medicinal Chemistry
School of Pharmacy
University of Georgia
Athens, GA 30601

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▲ To whom inquiries should be directed.

[2] Analabs, Inc., Hamden, Conn.

BOOKS

REVIEWS

Fourth International Congress on Pharmacology, Volumes I–V. Edited by R. Eigenmann. Lippincott, E. Washington Square, Philadelphia, PA 19105, 1970. 15 × 23 cm. Price $80.00.

The proceedings of the Fourth International Congress on Pharmacology held in Basel, Switzerland, July 14 to 18, 1969, have been published in a five-volume set. This Congress is a new title for the International Pharmacological Meetings. The volumes are divided under the following general headings:

Vol. I—Main Lectures, Discussion Groups, Demonstrations
Vols. II and III—Trigger Meetings
Vols. IV and V—Symposia

I must congratulate those responsible for gathering the necessary information, the arrangement of the topics, and the actual publication of the proceedings. This is a rather complex and difficult undertaking and, in the opinion of this reviewer, this task has been carried out admirably. These proceedings are an excellent source of current information on some of the latest findings in pharmacology. The subject matter spans a broad spectrum of topics, all of which are currently of interest and which are being studied by many workers. The list of scientists contributing to these proceedings is impressive and represents a truly international approach. There is a wealth of information included in these volumes. The readers will note that the discussions following certain main lectures are not just verbatim records of the comments made by various people. They have been designed as an overall chairman's report and thus constitute another source of well-defined, neatly organized information based on the discussion of the main topic. The demonstration section presents topics ranging from holography to unexpected phenomena of flow. The extensive references should be of great help to the worker interested in the literature of a particular topic.

The trigger meetings were a novel approach focusing on the scientist and that person's sometimes unique approach to pharmacological problems. The papers do present fascinating ideas which should be of interest and probably will stimulate further work on some of the problems discussed.

In an attempt to keep the various forms of presentations together, under the general headings, the varied topics have of necessity been spread throughout the volumes. Thus, a reader may have to check each volume for information concerning a particular area. The actual printing is clear, easy to read, on good quality paper. The various figures and graphs are excellently reproduced. The five volumes are packaged in a bound slip case, thus helping to keep these volumes together. However, they are somewhat difficult to remove singly.

This publication is recommended to the biological scientist who is interested in being current in his or her own particular area as well as other areas now included under the broad heading of pharmacology.

Reviewed by John J. DeFeo
University of Rhode Island
Kingston, RI 02881 ■