DRUGS AND TRANSPORT PROCESSES

1969: Cuthbert: Calcium and Cellular Function

1970: Aldridge: Mechanisms of Toxicity

1971: Rabin and Freedman: Effects of Drugs on Cellular Control
Mechanisms

1972: Rang: Drug Receptors

BIOLOGICAL COUNCIL
The Coordinating Committee for Symposia
on Drug Action

DRUGS AND TRANSPORT PROCESSES

A Symposium

Edited by
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*Report of a symposium held on 9 and 10 April, 1973
in London
at The Middlesex Hospital Medical School*

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British Pharmacological Society
and
Biochemical Society
British Society for Immunology
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Society for Endocrinology
Society for Experimental Biology

Organized by a Symposium Committee consisting of

B. A. Callingham (*Chairman and Hon. Secretary*)
A. W. Cuthbert
I. M. Glynn
W. F. Widdas

Foreword

Some while ago now, an unguarded remark set in train a series of events that led up to this particular symposium. Early in 1972 a meeting concerned primarily with the actions of diuretics was being planned but using the present title. A chairman was needed. The word transport, however, can mean different things to different people. To me it meant noradrenaline crossing the neuronal membrane, and I said so.

Of course it was not difficult to fill a two day meeting with papers concerned with transport; the problem was quite the reverse. With the newly decided policy of widening the scope, where could the limit be set? It was not a new problem, the sorcerer's apprentice had seen it before, but had not coped too well. The organizing committee concerned itself, therefore, with transport across epithelia and across the cell membrane, excluding, for example, transport into intracellular components.

The wide spectrum of interests and of expertise is reflected in the following pages, made up, as they are, from all the papers given at the symposium with much of the subsequent discussion. On the first day, diuretics and the kidney were well represented, with an impressive array of data from electrophysiological and biochemical experiments. The authors were able to air their own personal views in front of an audience drawn from many disciplines. This gave a chance for Tom Maren, for example, to take us all on his personally conducted tour of the body's production of acid and utilization of CO_2 in his own inimitable style, and to remind us how useful the dogfish is as an experimental animal. The array of experimental tissues was quite bewildering but the red cell was well represented.

The section concerning ionophores reflected the tremendous advances made over the past few years in the attempts to find out how an ion traverses the lipid membrane. No one actually brandished the elusive sodium carrier before the audience but one felt that it could happen at any moment. Likely compounds that could transport ions across lipid membranes were scrutinized minutely. With many of the synthetic ionophores their molecular structures looked so inviting to the tiny cation, encasing it in a protective hydrophobic shell, that the problem looked deceptively simple. Nevertheless, the step from synthetic to natural carrier must inevitably come sooner or later.

Organic solutes and their transport systems were extensively explored in the last session. Here the biochemical evidence predominated, yielding data on substrate specificity, affinity and the like, for real and aspiring neurotransmitters and their metabolites. Sugar transport in both the red cell and in epithelia gave sufficient kinetic data for model building, while Professor Semenza was able to insert a sugar 'carrier' into the black lipid membrane.

This was the proof, if proof were needed, that this group of scientists had a great deal in common, certainly more than I for one had suspected.

I am very pleased to have the opportunity to record my gratitude to Miss G. Blunt who, yet again, undertook the organization of the symposium. A task she performed with great tenacity and goodwill. My thanks are due also to Mrs A. Prasad, for without her editorial skill, these proceedings would never have seen the light of day. The generosity of the Wellcome Trust allowed us once more the freedom to invite speakers from abroad to our meeting.

B. A. Callingham
Cambridge
December, 1973

Contents

Foreword	Page vii
List of Participants	xi
1. GIEBISCH, G. The effects of drugs on the electrophysiological properties of kidney tubules	3
2. CAFRUNY, E. J., KOECHEL, D. A. and NIGROVIC, V. Receptors for mercurial and ethacrynic acid inhibition of sodium chloride transport	23
3. LANDON, E. J. and MOORE, L. Interaction of diuretics with thiols and cell membranes in kidney tubules	41
4. ROTHSTEIN, A., KNAUF, P. A., CABANTCHIK, Z. I. and BALSCHIN, M. The location and chemical nature of drug 'targets' within the human erythrocyte membrane	53
5. MAREN, T. H. The relation between renal acidification and bicarbonate reabsorption. A view of CO ₂ -mediated secretion in renal and other epithelia	73
6. EDELMAN, I. S. Thyroid and sodium transport	101
7. JARD, S. Adrenergic receptors in epithelia	111
8. TOMLINSON, R. W. S. Some aspects of steroidal action on the isolated frog skin	129
9. PASSOW, H. and WOOD, P. G. Current concepts of the mechanism of anion permeability	149
10. CUTHBERT, A. W. Characteristics of sodium channels in transporting epithelia	173
11. HLADKY, S. B. Pore or carrier? Gramicidin A as a simple pore	193
12. TRUTER, MARY R. Molecular structures of ionophores and their complexes with metal cations	211
13. HUNTER, M. J. The use of lipid bilayers as cell membrane models: an experimental test using the ionophore, valinomycin	227
14. FINKELSTEIN, A. Aqueous pores created in thin lipid membranes by the antibiotics nystatin, amphotericin B and gramicidin A: implications for pores in plasma membranes	241
15. GORDON, L. G. M. Ion transport <i>via</i> alamethicin channels	251
16. IVERSEN, L. L. Neuronal uptake processes for amine and amino acid transmitters	275

17. GILLESPIE, J. S. Drugs and ions influencing noradrenaline uptake and accumulation in smooth muscle cells	287
18. SHARMAN, D. F. The formation of some acidic metabolites in the brain, and their subsequent transport	297
19. ROOS, B.-E. The effects of drugs on the concentrations of some organic acids in human cerebrospinal fluid	309
20. SEMENZA, G. The transport systems for sugars in the small intestine. Reconstitution of one of them	317
21. WIDDAS, W. F. Pharmacological significance of new concepts for hexose transfers in erythrocytes	329
22. BAKER, G. F. and ROGERS, H. J. The effects of some centrally acting drugs on the hexose transfer system in human erythrocytes	341
23. MARTIN, K. Effects of lithium on choline transport in synaptosomes and human erythrocytes	347
Index	

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