POSTER COMMUNICATIONS

The information content of pharmacological experiments

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The information yield of experiments can be found in terms of their negative entropy, given that the experimental result can be expressed in terms of probabilities (Shannon, 1948).

The responses of tissues in pharmacological work are a function of probabilities (e.g. the probability of open channels, 'P_{open}',) but the precise nature of the function is not known. However, there are grounds for thinking that it must be fairly direct (Colquhoun, 1973). It is therefore reasonable to work out the information yield for a set of assumed values for 'P_{open}', using the binomial assumption that each channel exists in only one of two conformations (open or shut). The information is then found to be

$$H_n = -\sum_{k=1}^{n} P_k \log_2 P_k$$

where H_n is the information gained from n channels, and P_k is the probability of any particular outcome of the experiment in the n channels (Guiasu, 1977).

This calculation shows that, for small groups of channels the information yield rises to a shallow peak at the mid-point of the curve. This is not surprising since the function is symmetrical, but the shapes of the curves, which will be demonstrated, are of some interest in considering the use of dose response curves in pharmacological practice. The results provide added justification for the usual practice of taking the ED_{50} in pharmacological measurements.

References

COLQUHOUN, D. (1973). The relation between Classical and Co-operative Models for Drug Action. *Proc. Biol. Council Symp. on Drug Receptors*, Ed. Rang H.P., London, Macmillan, page 173.

GUIASU, S. (1977). *Information Theory with Applications.* McGraw Hill, London ISBN 0-07-025109-6, page 2.

SHANNON, C.E. (1948). A Mathematical Theory of Communication. *Bell System Technical Journal*, **27**, 379–423, 623–656.

Identification of two sulphur containing urinary metabolites of cinnamic aldehyde in the rat

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Cinnamic aldehyde is a widely used flavouring agent and a well-known contact sensitizer.

Because this substance has been reported to produce a glutathione depletion in the liver (Boyland & Chasseaud, 1970) we investigated its metabolism.

After i.p. administration of cinnamic aldehyde (3.8 mmol/kg in arachis oil) in the rat ($n = 4$) the urinary thioether excretion amounted to (6.5 ± 1.0)% of the dose. Two sulphur containing metabolites were isolated and identified by synthesis, n.m.r., and mass spectrography as 3-S-(*N*-acetylcysteinyl)-3-phenyl propylalcohol and 3-S-(*N*-acetylcysteinyl)-3-phenyl propionic acid.

Reference

BOYLAND, E. & CHASSEAUD, L.F. (1970). The effect of some carbonyl compounds on rat liver glutathione levels. *Biochem. Pharmac.*, **19**, 1526–1528.

Metabolism and toxicity of acrylates and methacrylates

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In addition to being very toxic to the skin acrylic and methacrylic esters have a strong contact sensitising capacity. An increasing use of these substances in many fields is a problem in occupational medicine and dermatology. Occlusive application of methyl acrylate on the shaved guineapig skin produced, like in man, a bullous erythema, histologically characterised by a spongiosis deep in the dermis. Autoradiography showed that metabolism of a locally administered dose was practically limited to the skin in the first 24 h; radioactive material was transported by the blood to the kidneys and concentrated in the