

AUTOMATED APPARATUS FOR BEHAVIOURAL TESTING OF TYPICAL AND ATYPICAL ANTIDEPRESSANTS IN MICE

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Antidepressant drugs are not all amenable to discovery by conventional animal screening tests. The closest pharmacological model in mice which is selectively sensitive to the acute administration of typical and atypical antidepressants still remains the behavioural test of Porsolt et al, (1977), in spite of some lack of specificity (Browne, 1979; Schechter & Chance, 1979; Wallach & Hedley, 1979). For the routine evaluation of large numbers of compounds the test is time-consuming. This demonstration exhibits a multi-channel system for automatically testing ten mice simultaneously.

The procedure is carried out as described (Porsolt et al, 1977) with CD1 male mice (21-29 g body wt) being dosed orally with compounds or vehicle (controls) one hour before testing. Each mouse is placed in the beam of a Doppler radar head and horn assembly (AEI Semiconductors, Lincoln, DA 8525/6) which transmits 10.687 GHz microwaves. The moving mouse causes reflections of a frequency differing from the transmitted signal. Within the Doppler head these reflected waves are mixed with a proportion of transmitted waves to produce a difference signal proportional to the activity of the mouse within the beam. The output from each Doppler head is fed to an amplifier whose gain has been calibrated to compensate for differences in sensitivity between individual heads. The signal passes through a Schmitt trigger to remove low-amplitude signals caused by small movements and to convert high-amplitude signals into pulses to facilitate counting. Each channel has a six-minute timer based on a common quartz-crystal oscillator. For the last four of the six minutes, counts of the mobility of each mouse are stored in a micro-processor memory for print-out on completion of the test.

Results obtained with the equipment using mice premedicated with standard antidepressant drugs correlate with those obtained by operator visual recording. The system eliminates human error and bias, as well as allowing the testing of large numbers of compounds.

Browne, R. G. (1979) *Europ. J. Pharmacol.* 58, 331-334

Porsolt, R. D. et al (1977) *Arch. Int. Pharmacodyn.* 229, 327-336

Schechter, M. D. & Chance, W. T. (1979) *Europ. J. Pharmacol.* 60, 139-142

Wallach, M. B. & Hedley, L. R. (1979) *Commun. Psychopharmacol.* 3, 35-39

THE USE OF A MICRO-COMPUTER IN THE TEACHING OF PHARMACOLOGY

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The availability, power and relatively low cost of micro-computers has allowed their introduction into a variety of new areas including the teaching of pharmacology. The system in use in the Department of Pharmacology at Leeds comprises a video-display unit, a 32K North-Star Horizon with twin disc drives and a teletype (to provide hard copy when necessary).

Three types of program are used :

1) Multiple Choice Question Program. This program presents MCQs (consisting of a stem and 5 alternatives each of which must be answered true or false) chosen at random from a subject-grouped question bank. The program corrects a student's wrong answers, provides a reference to a standard text-book and a mark, which is not retained by the system, assessing overall performance at the end of a particular session. Approximately 1000 MCQs are currently available in 12 subject groups.

2) Simulated Guinea-pig Ileum Program. This program provides a record of responses of a 'guinea-pig ileum' when agonists (with or without antagonists) are added to the 'tissue bath'. The responses are quantitatively correct and relative potencies and pA_2 values can be calculated from suitable traces. Biological variation between preparations and random variation in response are simulated. An 'unknown' agonist or antagonist can be chosen by the system and the student then has to characterise (identify) the agent using other known agonists and antagonists.

3) Data Processing Program. This simple statistical calculation program provides facilities for the calculation by students of mean, standard error, t-test, variance ratio test, regression analysis and a 4 point assay.

The system is popular with the students and is used extensively. For example, in the period January to June 1981 the system was used by students on 1387 separate occasions and supplied 20592 multiple choice questions. It provides a useful teaching aid and a familiarity with computer terminal use.

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