artificial CSF, directly into the substantia nigra of rat brain from a stereotactically placed fine glass micropipette with a tip diameter of 25 μm. Fifteen minutes later the animal was killed by perfusion fixation with 5% buffered glutaraldehyde, and the substantia nigra prepared for autoradiographic examination as described previously (Kelly & Dick, 1976). Light and electron microscopic autoradiographs showed the autoradiographic activity to be predominantly localized over the dopaminergic cell bodies in the pars compacta and over their dendrites in the pars reticulata. Silver grains were only rarely seen over nerve terminals. Control experiments showed [^{3}H]-GABA to be accumulated solely by nerve terminals in the substantia nigra (Kelly & Dick, 1976).

References

BJÖRKLUND, A. & LINDVALL, O. (1975). Dopamine in dendrites of substantia nigra neurones: suggestions for a role in dendritic terminals. *Brain Res.*, **83**, 531–537.

GEFFEN, L.B., JESSELL, T.M., CUELLO, A.C. & IVERSEN, L.L. (1976). Release of dopamine from dendrites in rat substantia nigra. *Nature, (Lond.*, **260**, 258–260.

HAJDU, F., HASSLER, R. & BAK, I.J. (1973). Electron microscopic study of the substantia nigra and the strionigral projection in the rat. *Z. Zellforsch.*, **146**, 207–221.

KELLY, J.S. & DICK, F. (1976). Differential labelling of glial cells and GABA-inhibitory interneurones and nerve terminals following the microinjection of [^{3}H]-β-alanine, [^{3}H]-DABA and [^{3}H]-GABA into single folia of the cerebellum. *Cold Spring Harbor Symposium on Quantitative Biology*, **40**, 93–106.

A variable programme controller for sequential drug administration

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A solid state controller, using complimentary metal oxide semiconductor (CMOS) logic, has been developed for automating procedures in which drugs are administered at various times in one or two separate sequences, for example, with and without antagonist present. The unit can be programmed from potentiometers and switches on its front panel.

A schematic diagram is shown in Figure 1. The multiplexed clock controls the time between drug additions (1 min to 1 h) by altering the frequency of an oscillator which feeds into a binary counter. The counter output is fed into the appropriate sequencer which initiates the drug addition and selects the next drug's timing interval. At full capacity, 8 drugs can be administered sequentially in each of two independent channels (A and B). Up to 10 such channel cycles can be selected within a non-repeating programme and channels can be changed at the end of any preselected cycle. There is provision for introducing a delay of either 30 or 60 min when changing from channel A to B and this facility is useful, for instance, to enable antagonists to reach equilibrium with the tissue before any further agonists are added.

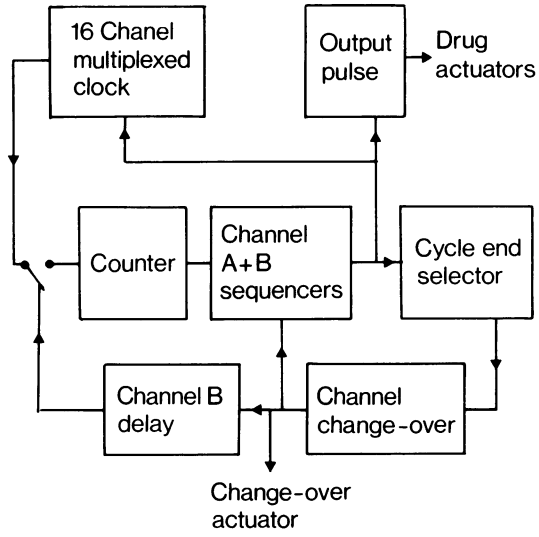

Figure 1