

Automated feeding of rats by gastric cannula

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Freely moving rats are fed a liquid diet through implanted gastric cannulae: the volume, time and number of meals for each rat is controlled by a microcomputer program. We have fed eight adult rats entirely by tube for 4 weeks.

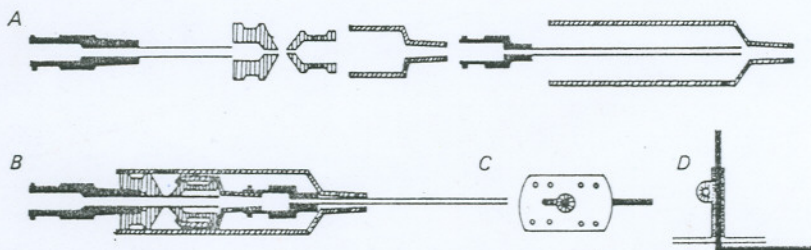


Fig. 1. A, components of swivel. B, swivel assembled. C, anchor button, viewed from above. D, anchor button, side view.

The cannula is 150 mm of vinyl tubing 1.5 mm i.d., 2.1 mm o.d. with 5 mm of silicone tube of the same diameter forced over one end. A 'Dacron' felt disk 10 mm in diameter, 1 mm thick, is cemented over the cannula where it meets the silicone tube with 'Silastic' 3110 RTV and Catalyst 4 (Hopkin & Williams) ('Superglue' dissolves in gastric juice). The cannula is implanted under anaesthesia (pento-barbitone sodium 30 mg i.p./ kg wt.). The Dacron disk is sutured to the peritoneal surface of the stomach. The cannula is led under the skin to the interscapular region (Tsukamoto, Reidelberger, French & Largman, 1984). It is secured there by an anchor button; this consists of a 20 × 12 mm plate and stalk of PVC which supports a 50 mm length from a 16 G needle, bent at a right angle; the free end of the cannula is fixed to the needle with 'Superglue' and the plate sutured to the dorsal muscles. A 240 mm length of 6FG feeding tube, enclosed in a stainless-steel tension spring (2 mm i.d., 0.5 mm diam. wire, Terry T49020), connects the needle to the swivel.

The swivel is based on the design of Brown, Amit & Weeks (1976). It is made, inexpensively, from the distal portions of 2 and 5 ml disposable syringes cut across at the 0.6 and 5 ml marks respectively. A 1 mm hole is made through the centre of each rubber piston. The points are cut off a 16 G needle, which is connected to the tube and protective spring, and a 2 mm needle with a Luer-Lok base, to which the tube from the pump will be connected; the latter is a standard infusion tube with Luer fittings. The parts are assembled as shown in Fig. 1.

The pumps are Perfusor IV (B. Braun, Melsungen, W. Germany). Infusion rates are selected by a gearbox and choice of syringes. Ten pumps are controlled by a MOCOM 6809-based microcomputer; the compiled PASCAL program allows the user to set up, edit and store a programme of daily meal times and volumes for each pump.

REFERENCES

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