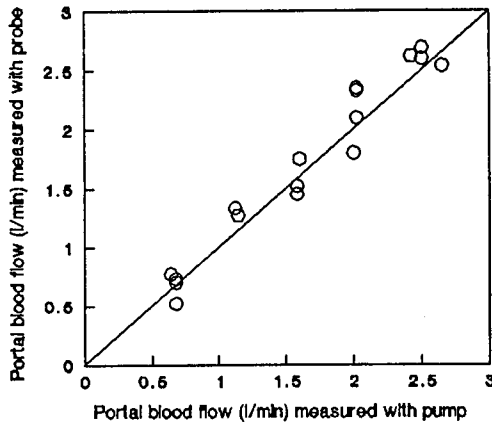


## CALIBRATION OF AN ULTRASONIC BLOOD FLOW METER IN THE SHEEP

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Measurement of nutrient flux through tissues requires an estimate of blood flow. We are studying portal uptake of nutrients in the sheep (Neutze et al. 1989) using an implantable ultrasonic blood flow probe and meter (Transonic Systems Inc., New York) (Drost 1978). Although the probes are laboratory calibrated by the manufacturer using water, we wanted to increase our confidence in the equipment by *in situ* calibration.

Two Merino wethers, in which a flow probe had been implanted around the portal vein 4 months previously, were heparinised, killed with a barbiturate overdose and immediately bled. Polyvinyl chloride tubing (6mm) was inserted into the portal vein 5cm distal to the probe and secured so there were no leaks. Vessels leaving the liver were completely severed to remove back pressure. Blood, diluted to 50% v/v with isotonic saline, was then run through the portal vein and probe for 30 second intervals using a perfusion pump and rate of disappearance from a measuring cylinder compared with flow rates recorded by the flow probe. Results are presented in the figure below. The flow rates selected for calibration included the range observed *in vivo* with the probes in our sheep.



Flow rate estimated by the blood flow probe ( $y$ ) was closely correlated with directly measured flow rate ( $x$ ) ( $r^2 = 0.95$ ). The relationship was best described by  $y = 1.036x + 0.019$  (s.e. <sub>$y$</sub>  = 0.159 l/min).

The ultrasonic blood flow probe and meter provided an accurate estimate of blood flow through the portal vein in the sheep and thus may be used with confidence in nutrient uptake studies of the portal system.

DROST, C.J. (1978). *Proc. San Diego Biomed. Symp.* 17: 299.

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