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Vane J R. A sensitive method for the assay of 5-hydroxytryptamine. *Brit. J. Pharmacol.* 12:344-9, 1957.
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When cut into a zigzag strip and suspended in an isolated organ bath, the "fundal" part of the rat stomach showed high sensitivity to the contractor effects of 5-hydroxytryptamine (serotonin). It provided a useful bioassay for this substance and, later, for others, including prostaglandins. [The *SCI*® indicates that this paper has been cited in over 1,010 publications.]

Bioassay with the Rat Stomach Strip

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Think of any part of the body and you can be sure that the pharmacologist has cut it out, put it into an isolated organ bath, or perfused its vessels in order to study the effects of drugs. For bioassay, segments of the gastrointestinal tract or spirally cut strips of vascular tissue have mainly been used. Such procedures are the backbone not only of bioassay but also of classical pharmacology.

I returned from a two-year postdoc with Arnold Welch at Yale University to become senior lecturer in pharmacology at the Royal College of Surgeons of England, where Bill (now Sir William) Paton was professor. In surveying the effects of drugs on the isolated stomachs of several laboratory species, I noticed that the white, translucent part (as opposed to the thicker, pink, pyloric antrum) of the rat stomach was singularly sensitive to the contractor effects of 5-hydroxytryptamine (5-HT). In the paper I described this part as the fundus, but Brendan Whittle tells me it is the corpus. Happily, the preparation became known as the rat stomach strip.

I decided to record from the more sensitive longitudinal muscle. The bag was opened down one side, the muscle cut in a zigzag fashion as if making a paper streamer and then pulled out, trimmed, and its length recorded on a kymograph with a spring lever. The rat stomach strip was useful, not only for the assay of 5-HT, but also to compare the activities of many analogues of tryptamine.[1]

Later, my interests turned to the bioassay of vasoactive substances in the circulation, and, for this, I discarded the artificial salt solutions designed as imitations of blood by Ringer, Locke, and Krebs—why not use blood itself?[2] Anaesthetize and heparinise an animal, and then take a constant stream of blood from an artery, allow it to superfuse the bioassay tissue(s), and then return it to the animal. My first experiment was with the rat stomach strip, and under these conditions it was highly sensitive to the relaxing effects of adrenaline and noradrenaline. It was necessary to add further tissues to what became known as the bioassay cascade in order to achieve selectivity. Specific antagonists for, say, 5-HT also increased selectivity and allowed the rat stomach strip to be used to bioassay prostaglandins.

The rat stomach strip has stood me in good stead over 35 years, contributing to several discoveries, such as the mode of action of aspirin (inhibition of the biosynthesis of prostaglandins) and of prostacyclin. It is continuing to do so in my new institute where we are studying with renewed intensity the vasoactive hormones released by endothelial cells such as prostacyclin,[3] endothelium-derived relaxing factor, and endothelin.

1. **Vane J R.** The relative activities of some tryptamine analogues on the isolated rat stomach strip preparation. *Brit. J. Pharmacol.* 14:87-98, 1959. (Cited 185 times.)
2. ————. The use of isolated organs for detecting active substances in the circulating blood. *Brit. J. Pharmacol.* 23:360-73, 1964. (Cited 480 times.)
3. ————. Adventures and excursions in bioassay: the stepping stones to prostacyclin. *Les Prix Nobel 1982.* Stockholm, Sweden: Nobel Foundation, 1983. p. 176-206. (Cited 5 times.) [See also: **Vane J R.** Adventures and excursions in bioassay: the stepping stones to prostacyclin. (Nobel lecture.) *Brit. J. Pharmacol.* 79:821-38, 1983. (Cited 15 times.)]

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