

is a convenient and sensitive expression of changes in systolic intervals without correction for heart rate or sex, varying within narrow limits but related to alterations in cardiac output and stroke volume (Weissler, Harris & Schoenfeld, 1969). Left ventricular end systolic and end diastolic volumes were measured by ultrasonics (Popp, Wolfe, Hirata & Feigenbaum, 1969) and stroke volume, cardiac output and the ejection fraction (EF) derived. EF and PEP/LVET have been shown to closely correlate with direct measurements of myocardial function.

Indoramin produced a statistically significant decrease in blood pressure with little change in R-R interval but PEP, LVET, PEP/LVET, EF and cardiac output were not significantly altered.

Indoramin, therefore, produces a hypotensive effect in man with no measurable change in the functional state of the myocardium. This contrasts with its cardio-inhibitory properties in animal studies.

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#### Peripheral blood scintillometry in psychophysiological research

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Venous occlusion plethysmography has several disadvantages (Landowne & Katz, 1942; Whitney, 1953; Brown, Giddon & Dean, 1965; Greenfield, Whitney & Mowbray, 1963), some of which may be overcome by the technique of peripheral blood scintillometry.

An intravenous injection of 200  $\mu\text{Ci}$  of  $^{113\text{m}}$ indium remains within the bloodstream and after equilibrium is attained within a few minutes, can be used to reflect the blood volume present in the part under investigation in a given interval of time.

The  $^{113\text{m}}$ indium in the forearm circulation, is detected by using two opposed sodium iodide scintillation counters mounted coaxially with the forearm resting on the lower counter. The system is adjusted so that only the 390 KeV photopeak gamma rays from the  $^{113\text{m}}$ indium are counted. The outputs from each counter are summed and displayed on a scaler so that the counts for any selected time interval can be recorded. They are also recorded on a ratemeter, from which a pen-recorder trace gives a graphical display of the count rate as a function of time. A facility also exists which enables the counts in any set time interval to be printed on punched tape so that the correction for radioactive decay of  $^{113\text{m}}$ indium can be made automatically with the aid of a computer.

Peripheral blood scintillometry appears to have important advantages compared with venous occlusion plethysmography:

(a) Observations can be made nearly continuously, the summated 5 s count being sufficiently high for statistical purposes with a 200  $\mu\text{Ci}$  dose of  $^{113\text{m}}$ indium.

(b) The peripheral part, for example the forearm, is in an undisturbed state.

(c) Venous occlusion, with or without arterial occlusion of the wrist is unnecessary, since the count-rate levels produced, for example, by stressful mental arithmetic and reflecting vasodilatation within the forearm (Abramson & Ferris, 1940) are typically more than ten standard deviations above the mean resting level.

(d) The method is insensitive to blood velocity changes but purely reflects the degree of vasodilatation/vasoconstriction within the peripheral part.

(e) The system-response speed is fast and allows a close analysis of the profile of the vascular response as it actually occurs in the undisturbed state.

(f) Information is obtained on the latency and duration of the muscle vasodilatation so that spontaneous fluctuations and habituation phenomena can be recorded as well as clear resting levels.

(g) A 200  $\mu\text{Ci}$  dose of  $^{113\text{m}}$ indium is considered small enough to allow repeat studies and its half life (100 min) allows recordings over a considerable length of time.

The method is being developed for psychophysiological research and has been used in pharmacological studies.

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#### Can meaningful dose-response curves be obtained by measuring the firing-rate responses of cells to iontophoretically applied substances? (T)

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#### Pharmacology of the autonomic nervous system—a new film (T)

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