

INVESTIGATION OF THE KIDNEY FUNCTION BY MEANS OF RADIO-
ACTIVE ISOTOPES

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^{131}I Hippuran and ^{123}I Hippuran have been used for the in-
vestigation of kidney function for some time already. Va-
rious mathematical models have been developed giving para-
meters which are useful in the diagnostics.

After an intravenous injection of Hippuran the changes of
radioactivity in blood, kidneys and, when possible, in
bladder, have been measured. Acquisition and processing
of data have been performed by NUCAB 2530 system connected
to a PDP 8 computer. The areas of interest have been de-
termined by a light-pen on a digital image of radioacti-
vity distribution in blood, kidneys and in bladder. A ma-
thematical model comprising fittings, smoothings, numeri-
cal integrations, deconvolution etc, has been applied and
the data on the function of the left and the right kidney
(mean transit time), their mutual relation in the total
clearance and the total clearance itself have been obtained.
In the case when also the time changes of radioactivity in
the bladder have been measured, data on the function of the
ureter and the bladder itself have been obtained. For that
investigation special software has been used. A larger part
of the obtained data has proved to be useful in clinical
practice. The model is being further developed.