

## Validation of curve-fitting method for blood retention of $^{99m}\text{Tc}$ -GSA: Comparison with blood sampling method

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We investigated a curve-fitting method for the rate of blood retention of  $^{99m}\text{Tc}$ -galactosyl serum albumin (GSA) as a substitute for the blood sampling method. Seven healthy volunteers and 27 patients with liver disease underwent  $^{99m}\text{Tc}$ -GSA scanning. After normalization of the y-intercept as 100 percent, a biexponential regression curve for the precordial time-activity curve provided the percent injected dose (%ID) of  $^{99m}\text{Tc}$ -GSA in the blood without blood sampling. The discrepancy between %ID obtained by the curve-fitting method and that by the multiple blood samples was minimal in normal volunteers  $3.1 \pm 2.1\%$  (mean  $\pm$  standard deviation,  $n = 77$  sampling). Slightly greater discrepancy was observed in patients with liver disease ( $7.5 \pm 6.1\%$ ,  $n = 135$  sampling). The %ID at 15 min after injection obtained from the fitted curve was significantly greater in patients with liver cirrhosis than in the controls ( $53.2 \pm 11.6\%$ ,  $n = 13$ ; vs.  $31.9 \pm 2.8\%$ ,  $n = 7$ ,  $p < 0.0001$ ). There was a highly linear correlation between the %IDs of  $^{99m}\text{Tc}$ -GSA and the plasma retention rate for indocyanine green ( $r = -0.869$ ,  $p < 0.0001$ ,  $n = 27$ ). These results indicate that the curve-fitting method provides an accurate %ID of  $^{99m}\text{Tc}$ -GSA and could be a substitute for the blood sampling method.

**Key words:**  $^{99m}\text{Tc}$ -galactosyl serum albumin, asialoglycoprotein, blood retention rate, curve fit