IMPROVED PROCESSING OF RADIOIMMUNOASSAY DATA
APPROACHES FOR SELECTION OF REGRESSION MODELS AND
FOR DISCRIMINATION OF DOSE RESPONSE CURVE WITH LARGE
ABERRANCE

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Goodness-of-fit of 3 regression models, 4-parameter
logistic, quadratic logit-log and linear logit-log
models, were evaluated by analysis of variance
(F-test) for data of 6 kinds of radioimmunoassays
(RIA). Scatchard plot analyses were made with the
representative data of these RIAs in order to find
the best choice of regression model in relation to
the characteristics of antigen-antibody reaction.
It was concluded that RIA with linear pattern on
Scatchard plot could be satisfactorily regressed
with either of 3-regression models, RIA with linear
with tail pattern regressed with either the logistic
or quadratic logit-log model, and RIA with hyperbolic
pattern regressed best with quadratic logit-log
model.

An study was also made on statistical indises
derived from regression analysis which enable quanti-
tation of the scatter around the regression curve.
It was found that among such indises normalised
standard deviation of replicate means around regres-
sion curve (designated as NSL) were the most sensi-
tive indicator of the aberrancy in dose-response
curve.

QUALITY CONTROL PROGRAM ON RADIOIMMUNOASSAY AND
ITS REALITY

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The necessity of quality control on RI in-vitro
tests has been regarded as important due to its
prompt development and generalization or mass sam-
ple treatment. There are, however, still incomple-
tion of basic investigations on actual execution of
quality control program, such as, assay standariza-
tion, non-specific interference, propriate selection
of control and standard serum and practical differ-
ence among commercially available kits. In this
circumstances, I would like to present the contents
of our quality control program and ask for your
constructive comments on it for establishment of
the rough guideline of future improvement and adva-
ncement. We adopt the control chart which shows
the simultaneous comparison between normality of
standard curve and variation of pooled and control
serum as the first check which is advocated by
Rodbard. Then we adopt NBS/T% and values of bound%
intercept at three different concentration levels
as index of standard curve. We make pooled serum
of different concentration levels by ourselves.
At the same time we select optimal concentration
levels for commercially available control serum.
Since the indicated values of commercially availa-
ble control serum are different from kit to kit,
individual laboratory has to set up its own rigid
values for them. Thus as far as the stability of
control serum after reconstitution is closely check-
ed, it is quite useful means to examine the quality
of assay system. As second check, we control the
reliability of data by measuring the differnce bet-
ween indicated and actual values at each assay with
double blind test. As final check, we totally veri-
fy the obtained data by refering the data by other
assay methods and clinical observations. We adopt
the 2-standard diviation(SD) of allowance range,
3SD for some specific items, for the variation of
index as check point. We use Olivethi-P-6060 for
data processing of quality control data in order to
increase the reliability of Checker judgement and
prevent the mistakes resulting from mass sample tre-
atment. We still have many things to investigate
and have to gather necessary data for statistical
processing to complete the final program of auto-
matic quality control. At the present situation,
the quality control of RIA more heavily depended