tion of the supradiaphragmatic inferior vena cava is studied based on the measurement of aldosterone in peripheral plasma using a double isotope dilution derivative method by Brodie and Shimizu et al.

Dogs were divided into three groups as follows.
1. Normal dogs (group I).
2. Dogs with constriction of the supradiaphragmatic inferior vena cava (group II).
3. Dogs with splenopneumopexy and constriction of the supradiaphragmatic inferior vena cava (group III).

The values of plasma aldosterone and electrolytes and liver function were evaluated in each group.

Results were summarized as follows.
1. Specificity
   Water blanks:
   0.116 ± 0.007 (SD) µg/20 ml (N = 7)
   Plasma from adrenalectomized dogs:
   0.155 ± 0.001 (SD) µg/20 ml (N = 3)
   -H/C: 2.8–9.9
2. Recovery:
   19.730 ± 0.770 (SD) % (N = 54)

3. Precision:
   2.031 ± 0.094 (SD) µg/20 ml (N = 4)
   5.042 ± 0.339 (SD) µg/20 ml (N = 4)

4. Accuracy:
   \[ Y = 0.225 + 0.926 \times \]
   In group I plasma aldosterone was 0.842 ± 0.207 µg/100 ml. It was 20.217 ± 1.469 µg/100 ml postoperative 10 days and increased to 25.308 ± 3.118 µg/100 ml postoperative 20 days following constriction of the supradiaphragmatic inferior vena cava in group II.
   On the other hand, it was 10.0246 ± 2.195 µg/100 ml postoperative 10 days and decreased to 5.885 ± 2.887 µg/100 ml postoperative 20 days following constriction of the supradiaphragmatic inferior vena cava, and ascites was well controlled in group III.

It is concluded that this measurement of plasma aldosterone is warranted to be reliable one and hyperaldosteronism caused by constriction of the supradiaphragmatic inferior vena cava is alleviated remarkably by portopulmonary shunt.

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**Analysis of Calcium Metabolism in Humans**

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Curve fitting methods were examined to define the optimum parameters of the calcium metabolism in humans.

The iterative Newton-Raphson method was used to solve the simultaneous non-linear least squares equations, and was tested its ability of convergence from arbitrary initial parameter guess.

To the parameters once converged, random error was added and the curve fitting was repeated with artificial parameters.

Convergence was always obtained and was not influenced by the addition of 5 percent parameter error, but three different least squares minima were found when the parameter error was 50 percent. Parameters with 100 percent error were converged once out of ten trials and were entirely unsatisfactory.

These results show that Newton-Raphson method was greatly influenced by the initial parameter guess, which, therefore, should be close to the true solution. Other search methods were being tested for better curve fitting procedure.