

Rapid Communication

**Factors affecting ionized calcium concentration in human bile**

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Ionized calcium is an important factor in the process of gallstone formation<sup>1,2)</sup>. Common bile duct bile obtained intraoperatively from 16 patients undergoing cholecystectomy was analyzed in order to examine the factors affecting ionized calcium concentration in human bile. Total bile acid and phospholipid were measured by enzyme assay, total calcium by atomic absorption spectroscopy, and ionized calcium with a Ca<sup>++</sup> electrode.

Ionized calcium concentration was constant and did not correlate with bile acid and phospholipid concentration. However, concentration of trapped calcium (total calcium-ionized calcium) correlated markedly with bile acid and phospholipid concentration ( $p < 0.01$ ) using Student's t-test as shown below.

These results indicate that trapping of ionized calcium by bile acid and phospholipid may be a regulatory mechanism for maintaining ionized calcium concentration in human bile.

**Key words:** calcium; bile acid

**References:**

- 1) Sutor DJ, Wilkie LI: Calcium in bile and calcium salts in gallstones. Clin Chem Acta 1977;79:119-121
- 2) Rege RV, Moore EW: Pathogenesis of calcium-containing gallstones. J Clin Invest 1986;77:21-26

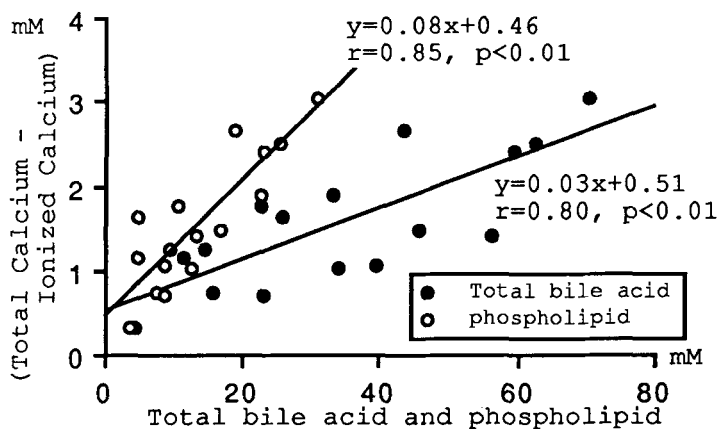


Fig. Correlation between total bile acid, phospholipid and trapped calcium in human bile duct bile.