Procollagen Type I C-Peptide (PIP) EIA Kit (Cat.# MK101)

Application: Using the Procollagen Type I C-peptide (PIP) EIA Kit to Measure PIP in Human Serum Samples

The Procollagen Type I C-Peptide (PIP) EIA Kit (Cat. #MK101) is an in vitro enzyme immunoassay (EIA) for the quantitative measurement of human, bovine, horse, monkey, or canine PIP in biological fluids (e.g., serum, cell culture supernatants, cell extracts).

Collagen type I is synthesized as precursor molecules called procollagens. The precursor molecules contain additional peptide sequences, termed "propeptides," at both the amino-terminal and the carboxy-terminal ends. The amount of free propeptides is directly proportional to the number of collagen molecules synthesized. In particular, PIP has been used to determine collagen levels associated with certain health disorders, including bone diseases, alcoholic liver diseases, liver cirrhosis, and scirrhous adenocarcinoma (Borrmann type IV) of the stomach.

This application note illustrates the utility and sensitivity of the PIP EIA Kit for measuring PIP levels in human biological samples.

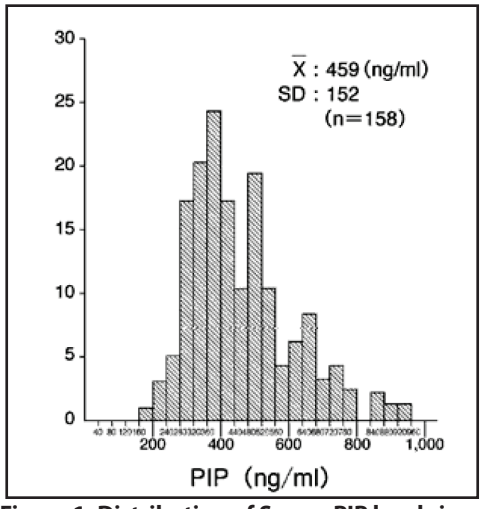

Figure 1. Distribution of Serum PIP levels in healthy subjects.

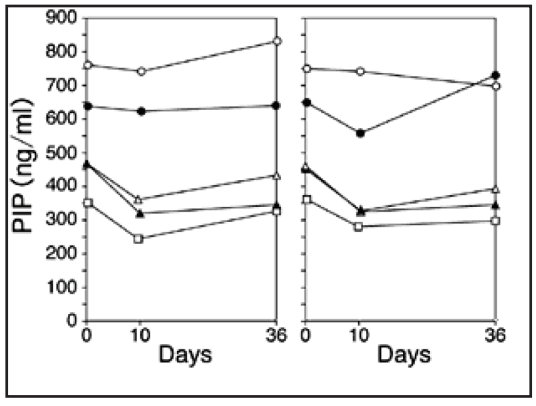

Figure 3. Stability of PIP in stored human serum. After measuring the PIP concentration in fresh serum (Day 0), the serum samples were stored at -20°C (A) or -40°C (B). PIP was re-measured after 10 and 36 days. The PIP levels remained constant after storage.

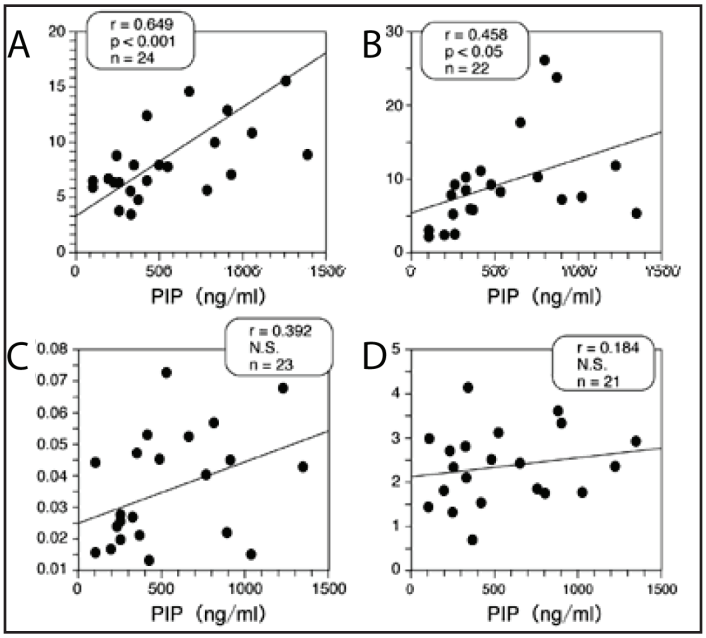

Figure 2. The correlation between serum PIP levels and bone metabolism parameters in subjects with postmenopausal osteoporosis. Serum PIP was positively correlated with indices for bone formation, including serum alkaline phosphatase activity (Kind and King method) (A) and serum osteocalcin concentration (IRMA method) (B). However, two measures of bone resorption, urine hydroxyproline/creatinine ratio (HPLC method) (C) and serum tartrate-resistant acid phosphatase (D), were not correlated with serum PIP levels.

Application: Using the Procollagen Type I C-peptide (PIP) EIA Kit to Measure PIP in Human Serum Samples (continued)

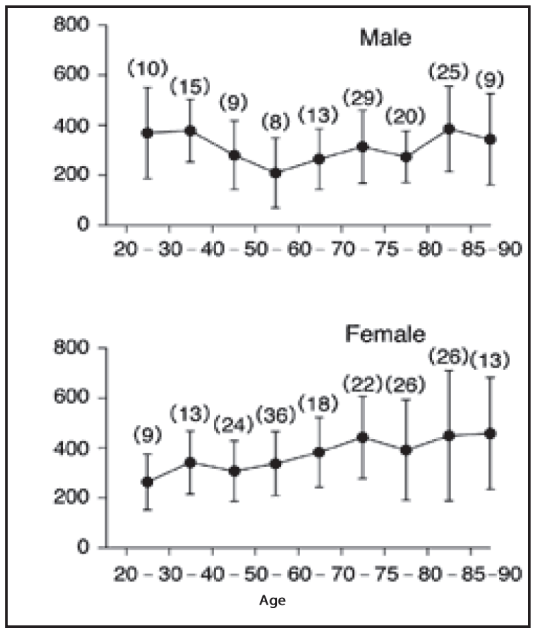

Figure 4. Serum PIP levels in subjects of various ages. The mean PIP level (ng/ml) (±standard deviation) for each age group is plotted. The numbers inside of parentheses indicate the number of subjects in each age range.

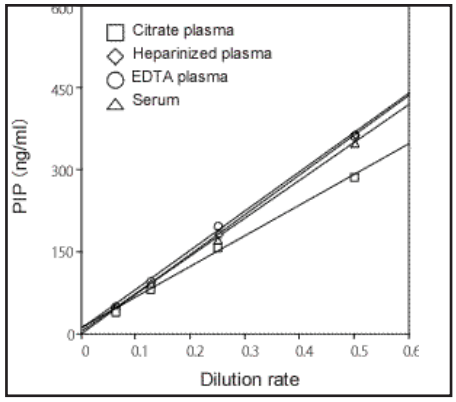

Figure 5. Effect of anticoagulants. The effect of anticoagulants was examined with healthy samples by comparing the dilution curve of the samples which were simultaneously treated with different anticoagulants.

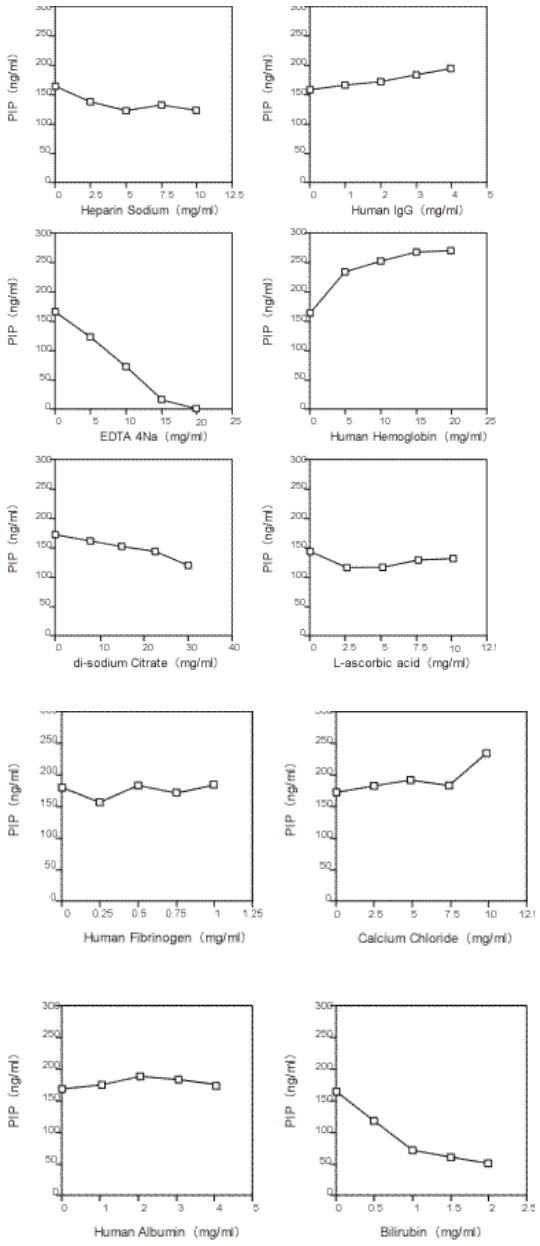

Figure 6. Effect of coexisting substances. The volume of sample to co-existing substance was 4:1. The final concentration of the co-existing substance is indicated (mg/ml).