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## Plasma levels of bone health-related minerals (calcium, phosphorus, magnesium and aluminum) in patients with fractures in Taiwan

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Aluminum (Al) is the component of various legal food additives. Although studies have proven that Al overloading in dialysis renal patients is toxic, there is few study related to body Al content and bone health in Taiwanese population. The purpose of this study is to analyze the associations among blood levels of osteoporotic-related minerals, PTH, vitamin D and bone density. 30 hospitalized patients with fracture for surgery and 39 healthy controls were recruited and blood levels of calcium (Ca), phosphate (P), magnesium (Mg), and aluminum (Al), as well as vitamin D and parathyroid hormone (PTH) were tested. Subjects with bone fracture were recruited in 3-5 days right after their surgeries respectively. The results indicated that the hip bone density in fracture patients are significantly higher than control group ( $P < 0.05$ ), but not for the spine bone density. The average plasma concentration of Al, Mg, Ca, P, PTH and vitamin D were similar in two groups. In addition, 79.9% subjects have lower vitamin D status, using the blood vitamin D level 30 ng/mL as standard and vitamin D concentration are significantly lowering with age ( $P = 0.038$ ). There is a negative correlation between blood Al and Mg content ( $P = 0.004$ ). 5% of all subjects have abnormal Al level (above 10  $\mu\text{g/L}$ ) in this study. There is no relationship between Al level and other mineral concentration and bone density may due to small sample size. This study will be continued to recruit more subjects. The expected results are useful for analysis of the risk of exposure, the implementation of clinical care and health education to improve the high prevalence of osteoporosis in Taiwan, and to establish the osteoporosis-related serum measurement data base.

### Biography

Pinchun Yang is pursuing her PhD in Food and Nutrition at Fu Jen Catholic University. She graduated from Chung Shung Medical University, and then worked as Research Assistant for four years at Bone Center Taipei Medical University. After she worked with orthopedic doctors to complete four great osteoporosis prevention programs, she also completed her Master degree at Fu Jen Catholic University, Taiwan.

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