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### Association of MTHFR C677T Polymorphism with Bone Mineral Density of Osteoporosis in Postmenopausal Thai Women

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#### Abstract

**Background:** Osteoporosis and osteopenia is rising with the increase in numbers of postmenopausal women. Methylenetetrahydrofolate reductase (MTHFR), a homocysteine catabolizing enzyme, is involved in the regulation of bone mineral density (BMD). The association between MTHFR C677T polymorphism with osteoporosis in postmenopausal Thai women is hitherto unclear.

**Objective:** To investigate the association between MTHFR C677T and BMD in postmenopausal Thai women.

**Material and Method:** The study subjects consisted of 346 postmenopausal Thai women volunteers. Standard dual-energy X-ray absorptiometry (DXA) was used for measurement of BMD T-score. Restriction fragment length polymorphism (RFLP) analysis was used for measurement of MTHFR C677T polymorphism.

**Results:** In the evaluation of 346 postmenopausal Thai women heterozygous (CT) genotype had a risk of osteopenia than normal control (odds ratio (OR) = 5.66,  $p < 0.001$ ). BMD T-scores at each bone position revealed that heterozygous (CT) genotype had increased risk of osteopenic bones than normal controls at lumbar spines 1, 2, and 4 (OR = 2.48,  $p < 0.001$ , OR = 1.98,  $p = 0.008$  and OR = 1.83,  $p = 0.016$  respectively), ward's triangle (OR = 2.08,  $p = 0.008$ ), and head of radius (OR = 2.95,  $p = 0.008$ ).

**Conclusion:** These results indicate the possibility of using MTHFR C677T polymorphism to identify postmenopausal Thai women at high risk of osteopenia.

**Keywords:** Postmenopausal women, MTHFR (C677T) polymorphism, Osteopenia, Osteoporosis, Bone mineral density

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