

First-generation anti-epileptic drug

Fu et al. conducted a [meta-analysis](#) to evaluate the effects of second-generation [antiepileptic drugs](#) (AEDs; [levetiracetam](#), [lamotrigine](#)) compared to [First-generation anti-epileptic drugs](#) ([valproic acid](#), [carbamazepine](#)) on bone metabolism in [epilepsy](#) patients. [PubMed](#), [Web of Science](#), [Clinical trials.gov](#), [Wanfang](#), and [China's](#) national knowledge infrastructure databases were searched. Ten [trials](#) were included. Results showed: (1) The overall SMD for changes of serum calcium, phosphorus, ALP, and PTH levels from baseline of LEV versus first-generation AEDs were 1.00 (95% CI=0.23-1.77, Z=2.56, p=0.01), 0.98 (95% CI=- 0.05 to 2.01, Z=1.86, p=0.06), - 1.17 (95% CI=- 2.08 to - 0.25, Z=2.50, p=0.01), 0.07 (95% CI=- 0.14 to 0.27, Z=0.63, p=0.53), respectively. (2) The overall SMD for changes of serum calcium, phosphorus, ALP, and PTH levels from baseline of LTG versus first-generation AEDs were -0.16 (95% CI=- 0.47 to 0.16, Z=0.99, p=0.32), -0.05 (95% CI=- 0.55 to 0.44, Z=0.22, p=0.83), 0.10 (95% CI=- 0.53 to 0.73, Z=0.31, p=0.75), -0.05 (95% CI=- 0.52 to 0.42, Z=0.22, p=0.83), respectively. Overall, the results indicate that compared to first-generation AEDs, LEV has less adverse effects on blood bone metabolism markers in [epilepsy](#) patients, while LTG does not. However, due to small number of included studies, the results warrant additional research ¹⁾.

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Fu J, Peng L, Li J, Tao T, Chen Y. Effects of Second-Generation Antiepileptic Drugs Compared to First-Generation Antiepileptic Drugs on Bone Metabolism in Patients with Epilepsy: A Meta-Analysis. *Horm Metab Res.* 2019 Aug;51(8):511-521. doi: 10.1055/a-0963-0054. Epub 2019 Aug 13. PubMed PMID: 31408897.

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