

Regulation of the sodium-phosphate cotransporter Pit-1 and its role in vascular calcification

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Vascular calcification is caused by the deposition of basic calcium phosphate crystals in blood vessels, myocardium, and/or cardiac valves. Calcification decreases artery wall compliance, and arterial calcification is associated to mortality in hyperphosphatemic renal failure and diabetes mellitus. The calcification of the tunica media characterizes the arteriosclerosis observed with age, diabetes and end stage-renal disease, and it can develop independently from intima calcification. As part of the vascular calcification mechanism, vascular smooth muscle cells (VSMC) experience a transition from a contractile to an osteochondrogenic phenotype and a sequence of molecular events that are typical of endochondral ossification. The current evidence indicates a key role of increased phosphate uptake by VSMC for calcification, which supplies the substrate for hydroxyapatite formation and could trigger or potentiate VSMC transdiferentiation. The present review analyzes the sodium-phosphate co