



In Vitro Effects of Strontium Citrate on Human Osteoblasts

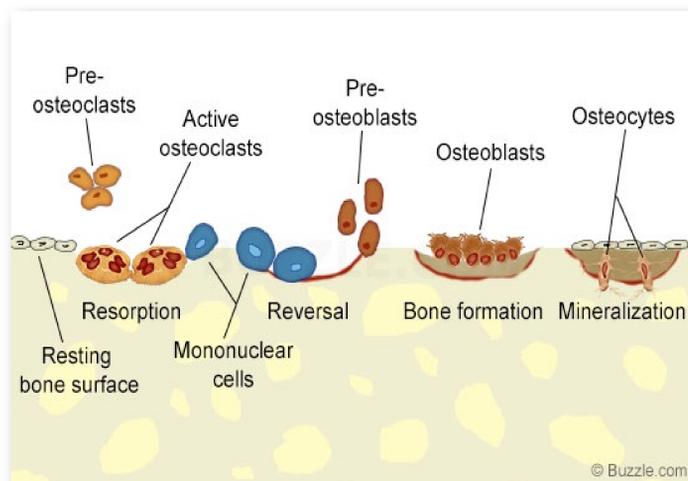
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Background

- ❖ Strontium citrate (SrCr) supplementation is commonly used by patients who exhibit symptoms of bone degenerative diseases
- ❖ Such diseases result from deficient net bone growth, primarily controlled by osteoblast, osteoclast and osteocyte activity
- ❖ This supplementation has been shown to increase osteoblast activity (bone formation) and decrease osteoclast activity (bone resorption)
- ❖ **An optimal dose concentration of this supplementation is unknown** due to inadequate research measuring such a concentration



Bone modeling and re-modeling

Objective

- ❖ Identify an *in vitro* optimal concentration of strontium citrate supplementation in which osteoblast activity is maximized

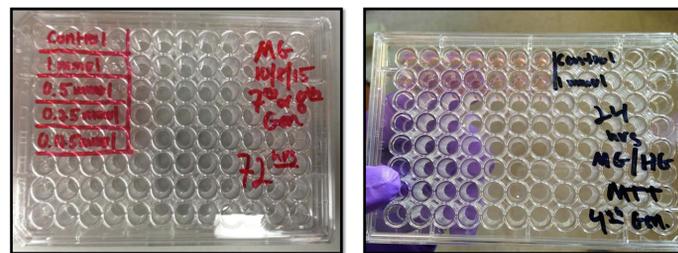
Materials/ Methods

- Human Osteoblasts (HOBs) obtained from a commercial supplier, were cultured in Minimum Essential Medium (MEM) with 10% Fetal Bovine Serum and 1% Penicillin until ~90% confluency



HOBs in culture at ~90% confluency, 400x magnification

- HOBs were transferred to prepared concentrations of SrCr (0 mM, 1 mM, 0.5mM, 0.25 mM or 0.125 mM) in MEM and incubated for various durations



96 well plates used for different studies

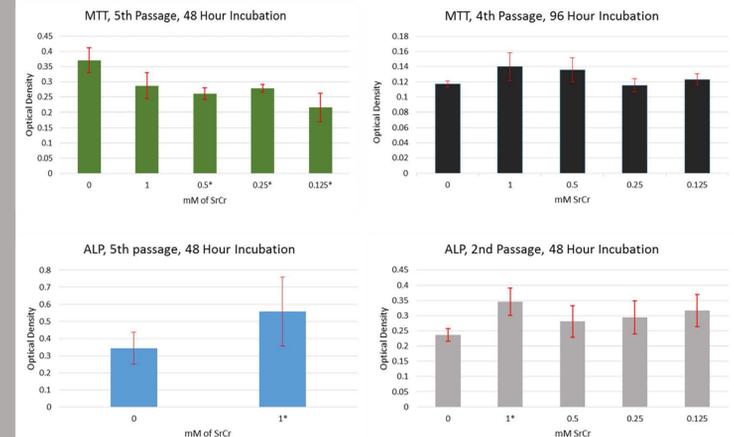
- HOB proliferation and differentiation was measured by the mitochondrial enzyme (MTT) Assay and Alkaline Phosphatase (ALP) Assay, respectively



96 well plate on loading dock of Spectrophotometer

Results/ Conclusions

* Denotes p<0.05



- Increases in HOB metabolism and differentiation were observed in some experiments, particularly with 1mM SrCr.
- While this study suggests SrCr directly affects HOB metabolism and differentiation, the effects were not consistently observed in replicate experiments.
- This study does not define an *in vitro* concentration of SrCr in which HOB activity is maximized and suggests that many undefined variables might be involved in the response to this agent.
- Further *in vitro* studies and clinical trials are necessary to delineate the optimal conditions for a SrCr effect.

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