

Hypoxia increases the expression of enamel proteins and cytokines in an ameloblast-derived cell line

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Outline

- * Introduction
- * Methods
- * Findings
- * Discussion/conclusion
- * References
- * Acknowledgements

Introduction

- * Molar-Incisor hypomineralization is defined as a hypomineralization of systemic origin that affects one to all of the first permanent molars and is often associated with affected permanent incisors (Weerheijm et al., 2001)

Aetiology

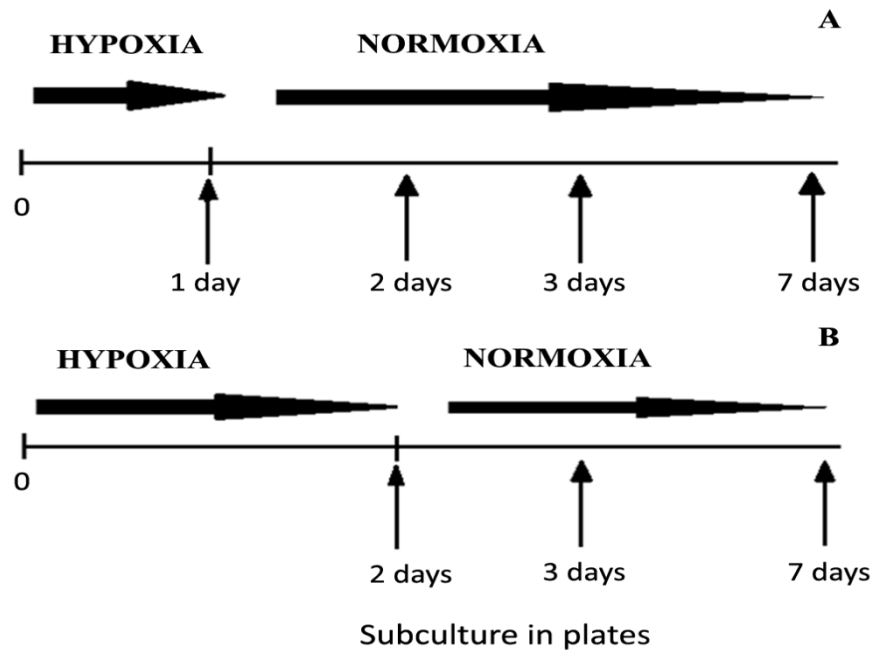
- * Environmental conditions
- * Respiratory tract infections
- * Perinatal complications
- * Dioxins
- * Oxygen starvation and low birth weight
- * Calcium and phosphate metabolic disorders
- * Childhood diseases
- * Antibiotics
- * Prolonged breast feeding

Objective

- * The purpose of this study was to investigate the molecular effect of hypoxic conditions on an ameloblast-derived cell line.

Methodology

- * Xvivo Incubation System
- * Experimental strategy with hypoxia exposure for 24 hours (A), and for 48 hours (B)

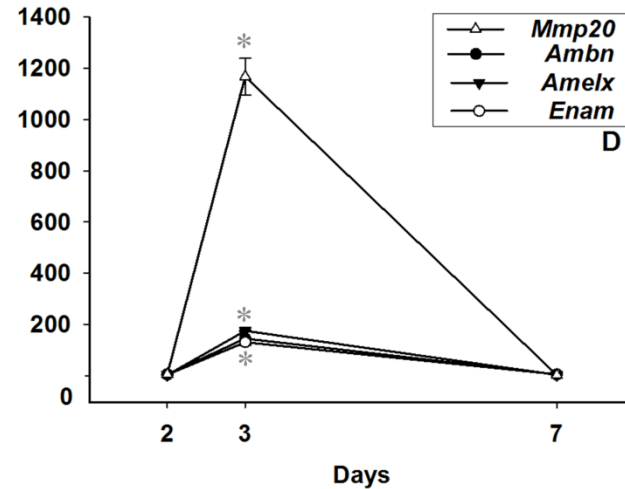
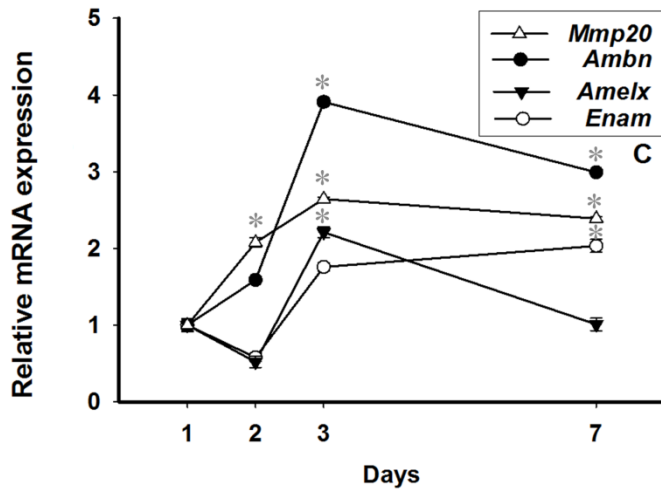
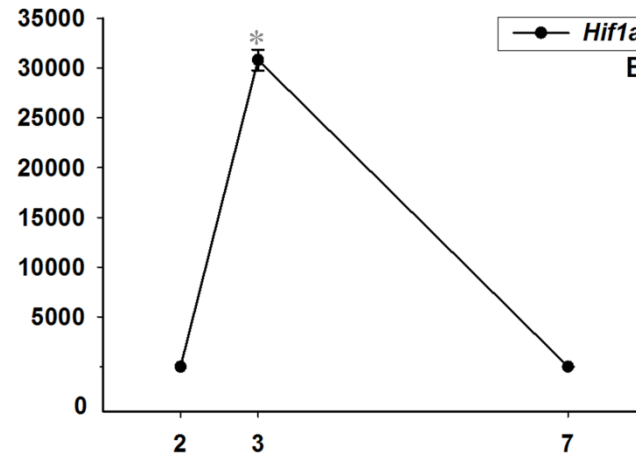
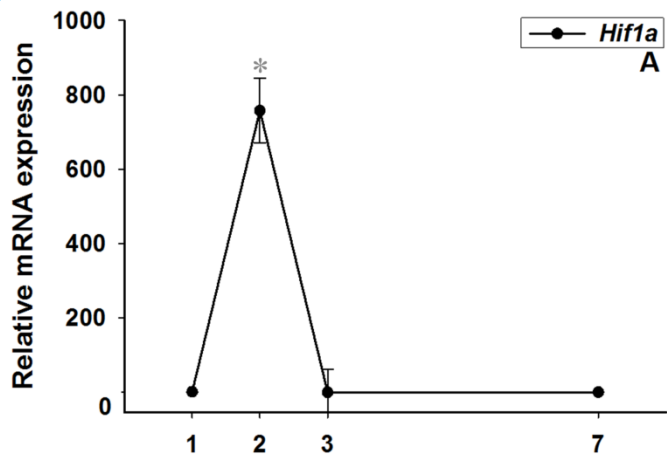


Methodology

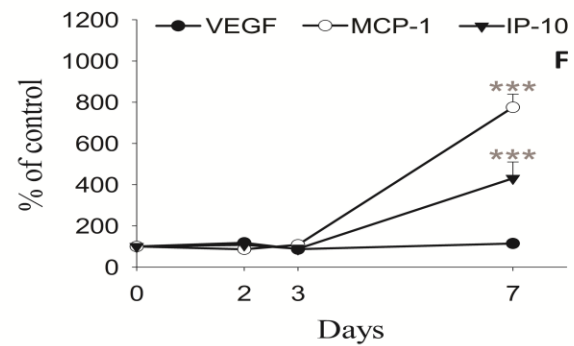
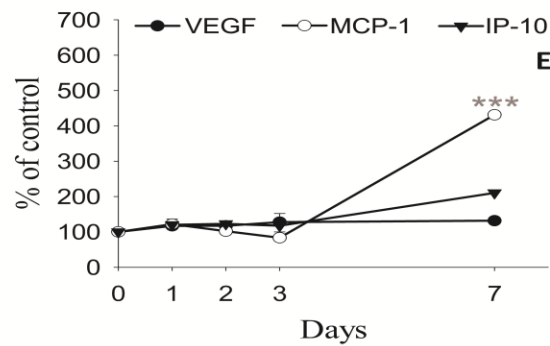
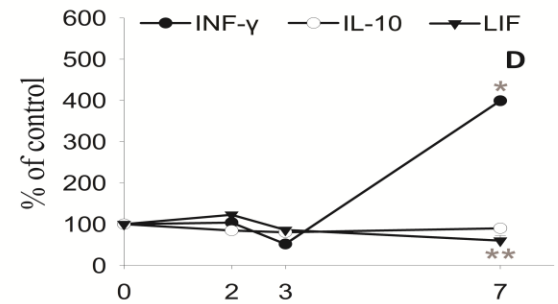
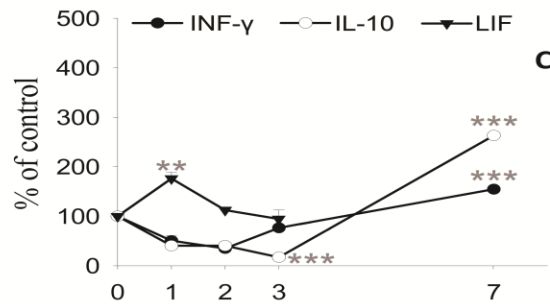
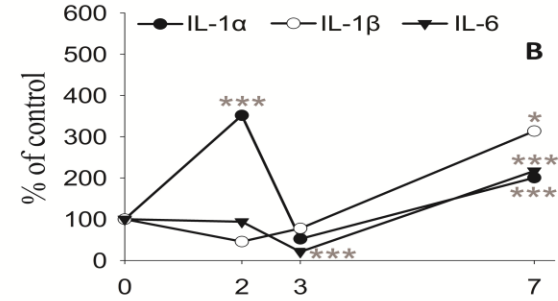
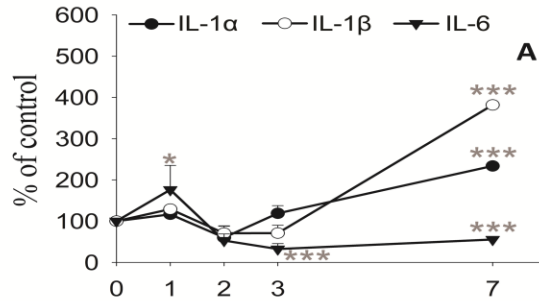
- * The Luminex[®] 200TM System
- * ViiA[™] 7 Real-Time PCR System
- * ELISA Plate Readers for measuring the LDH level and the ALP activity

Results

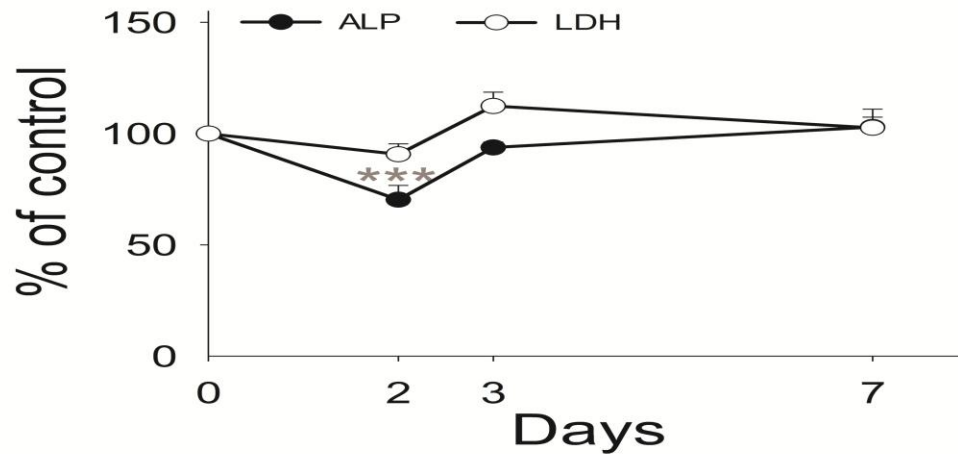
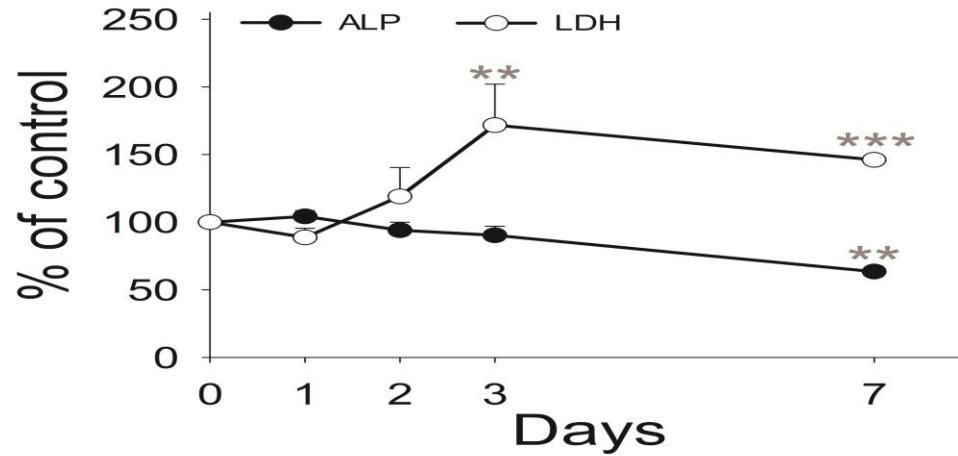
Effect of hypoxic conditions on the expression of enamel proteins



Effect of hypoxic conditions on cytokine secretion



Effect of hypoxic conditions on mineralization and irreversible damage.



Discussion/conclusion

- * Increased expression of enamel proteins and proteases
- * Stimulation of the secretion of pro-inflammatory factors and angiogenesis-stimulating factors.
- * The results need to be corroborated by various physiologic or pathologic conditions, *in vivo*.

Acknowledgements

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