

Expression and function of dopamine in odontoblasts

藤野, 翔香

<https://hdl.handle.net/2324/4060084>

出版情報 : Kyushu University, 2019, 博士 (歯学), 課程博士

バージョン :

権利関係 : Public access to the fulltext file is restricted for unavoidable reason (2)

氏 名	藤野 翔香			
論 文 名	Expression and function of dopamine in odontoblasts (象牙芽細胞におけるドーパミンの発現および役割)			
論文調査委員	主 査	九州大学	教授	清島 保
	副 査	九州大学	教授	西村 英紀
	副 査	九州大学	教授	久木田 敏夫

論 文 審 査 の 結 果 の 要 旨

Dopamine (DA) is produced from tyrosine by tyrosine hydroxylase (TH). A recent study has reported that DA promotes the mineralization of murine preosteoblasts. However, the role of DA in odontoblasts has not been examined. Therefore, in this investigation, we researched the expression of TH and DA in odontoblasts and the effects of DA on the differentiation of preodontoblasts (KN-3 cells). Immunostaining showed that TH and DA were intensely expressed in odontoblasts and preodontoblasts of rat incisors and molars. KN-3 cells expressed D1-like and D2-like receptors for DA. Furthermore, DA promoted odontoblastic differentiation of KN-3 cells, whereas an antagonist of D1-like receptors and a PKA signaling blocker, inhibited such differentiation. However, antagonists of D2-like receptors promoted differentiation. These results suggested that DA in preodontoblasts and odontoblasts might promote odontoblastic differentiation through D1-like receptors, but not D2-like receptors, and PKA signaling in an autocrine or paracrine manner and plays roles in dentinogenesis.

The manuscript has already been published in Journal of Cell Physiology. The candidate made almost satisfied response to the reviewers' questions. Based on this research, the candidate deserves to be conferred the degree of DOCTOR OF PHILOSOPHY (Dental Science) in the Graduate School of Dentistry, Kyushu University.