ONLINE ISSN : 1880-313X
PRINT ISSN : 0388-6107

Biomedical Research
Vol. 27 (2006) , No. 6 December pp.289-295

The function of connexin 43 on the differentiation of rat bone marrow cells in culture

Minoru KAMIJO[1)], Takayuki HARAGUCHI[1)], Morio TONOGI[1)] and Gen-yuki Yamane[1)]

1) Department of Oral Medicine, Oral and Maxillo-Facial Surgery, Tokyo Dental College

(Received September 27, 2006)
(Accepted October 26, 2006)

ABSTRACT

Connexin (Cx) 43-mediated gap-junctional intercellular communication (GJC) mainly regulates the osteoblastic differentiation, but much of the function of Cx43 on the differentiation of bone marrow cells is unclear. This study is aimed to clarify relationship between the differentiation of rat bone marrow cells and the function of Cx43. Bone marrow cells derived from four-week-old Wistar strain rats were grown in the presence and absence of 18-α-glycyrrhetinic acid (AGA, 100 μM) to inhibit Cx43-mediated GJC. Expression of Cx43 gene and protein, and the level of intracellular cyclic adenosine monophosphate (cAMP) were determined as the assessment of the function in Cx43-mediated GJC, and alkaline phosphatase (ALP) activity and mineralization were measured as the assessment of osteoblastic differentiation. The Cx43 gene expression was first observed at 2 days, but under the condition in which rat bone marrow cells were treated with AGA, there was no significant effect on the Cx43 gene expression. By administrating AGA to rat bone marrow cells, all parameters of maturation but the Cx43 gene expression significantly decreased. The results of this experiment suggest that Cx43-mediated GJC plays a critical role in rat bone marrow cells, progress toward maturation.

To cite this article:

Minoru KAMIJO, Takayuki HARAGUCHI, Morio TONOGI and Gen-yuki Yamane; “The function of connexin 43 on the differentiation of rat bone marrow cells in culture”, *Biomedical Research*, Vol. **27**, pp.289-295 (2006) .

doi:10.2220/biomedres.27.289

JOI JST.JSTAGE/biomedres/27.289