

血管内皮細胞におけるアルドステロンの産生とその調節因子に関する研究

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Aldosterone and its regulatory factors in the vascular endothelial cells.

Research Project

Project/Area Number

05454318

Research Category

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Allocation Type

Single-year Grants

Research Field

内分泌・代謝学

Research Institution

Kanazawa University

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Aldosterone / Molecular Biology / Hyperplasia / Angiotensin

Research Abstract

In the current study, we identified that aldosterone, a potent mineralocorticoid which is synthesized exclusively in the adrenal cortex, is also produced in the vasculature. In the first year, we undertook a perfusion experiment of the rat mesenteric arteries and identified an aldosterone like immunoreactivity in the HPLC-separated perfusate. This fraction was further analyzed by GCMS which confirmed that immunoreactive peak was

identical to aldosterone molecule. In the second year, we performed genetic expression of P450aldo (aldosterone synthetase) mRNA in human endothelial cells. P450aldo mRNA was detected at a concentration of 1/50 compared with the adrenal gland. We hypothesized that vascular aldosterone may contribute to the vascular remodeling and to the pathogenesis of hypertension in autocrine/paracrine fashion

Research Products (15 results)

All Other

All Publications (15 results)

- [Publications] K.Iki: "The activities of 5 β -reductase and 11 β -hydroxysteroid dehydrogenase in essential hypertension." *Steroids*. 59. 656-660 (1994) ▼
- [Publications] Y.Takeda: "Production of aldosterone in isolated rat blood vessels." *Hypertension*. 25. 170-173 (1994) ▼
- [Publications] H.Hatakeyama: "Vascular aldosterone: Biosynthesis and a link to angiotensin II-induced hypertrophy of vascular smooth muscle cells." *J.Biol.Chem.* 269. 24316-24320 (1994) ▼
- [Publications] Y.Takeda: "Gene Expression of 11 β -hydroxysteroid dehydrogenase in the mesenteric arteries of genetically hypertensive rats." *Hypertension*. 23. 577-580 (1994) ▼
- [Publications] Y.Takeda: "Biosynthetic pathway of 19-noraldosterone in isolated rat glomerulosa cells." *J.Steroid Biochem Mol Med.* 49. 69-71 (1994) ▼
- [Publications] Y.Takeda: "Decreased activity of 11 β -hydroxysteroid dehydrogenase in mesenteric arteries of Dahl-salt sensitive rats." *Life Sciences*. 54. 1343-1349 (1994) ▼
- [Publications] I.Miyamori: "Inhibition of the renin angiotensin system." *Cardiner-Caldwell Comm.*, 3 (1993) ▼
- [Publications] K.Iki et al.: "The activities of 5 β -reductase and 11 β -hydroxysteroid dehydrogenase in essential hypertension." *Steroids*. 59. 656-660 (1994) ▼
- [Publications] Y.Takeda et al.: "Production of aldosterone in isolated rat blood vessels." *Hypertension*. 25. 170-173 (1994) ▼
- [Publications] H.Hatakeyama et al.: "Vascular aldosterone : Biosynthesis and a link to angiotensin II-induced hypertrophy of vascular smooth muscle cells." *J.Biol.Chem.* 269 (24316-24320). (1994) ▼
- [Publications] Y.Takeda et al.: "Gene Expression of 11 β -hydroxysteroid dehydrogenase in the mesenteric arteries of genetically hypertensive rats." *Hypertension*. 23. 577-580 (1994) ▼
- [Publications] Y.Takeda et al.: "Biosynthetic pathway of 19-noraldosterone in isolated rat glomerulosa cells." *J.Steroid Biochem Mol Med.* 49 (1). 69-71 (1994) ▼
- [Publications] Y.Takeda et al.: "Decreased activity of 11 β -hydroxysteroid dehydrogenase in mesenteric arteries of Dahl-salt sensitive rats." *Life Sciences*. 54 (18). 1343-1349 (1994) ▼
- [Publications] H.Hatakeyama et al.: "Angiotensin II up-regulates the expression of type A endothelin receptor in human vascular smooth muscle cells." *Biochem.Mol.Biol.International*. 34 (1). 127-143 (1994) ▼
- [Publications] I.Miyamori et al.: "Effects of angiotensin converting enzyme inhibitor on aldosterone production in the mesenteric arteries in rats." In *Inhibition of the renin angiotensin system*. Eds. MacGregor G.A. Cardiner-Caldwell Comm. 219-221 (1993) ▼

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