

# Elucidation and Treatment of Retinal Involvement in Spontaneously-Diabetic Rats

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# 1999 Fiscal Year Final Research Report Summary

## Elucidation and Treatment of Retinal Involvement in Spontaneously-Diabetic Rats

Research Project

### Project/Area Number

10671637

### Research Category

Grant-in-Aid for Scientific Research (C)

### Allocation Type

Single-year Grants

### Section

一般

### Research Field

Ophthalmology

### Research Institution

Kanazawa University

### Principal Investigator

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### Project Period (FY)

1998 – 1999

### Keywords

retina / choroid / nitric oxide / dopamine / oscillatory potential / hypoxia / streptozotocin / OLETF

### Research Abstract

The oscillatory potentials (Ops) of the electroretinogram were delayed in streptozotocin (STZ)-induced diabetic rats as long as they were hyperglycemic and were restored to normal as long as they became normoglycemic by a subsequent insulin treatment, which chronologically coincided with a decrease and an increase in the retinal blood

flow but not with the degree of retinal vascular leakage. The Ops of excised rabbit eye cups were very sensitively delayed to minute hypoxia. In control rats, nitric oxide synthase (NOS) inhibitors, non-selective or neuronal NOS-selective, similarly decreased the choroidal blood flow. Inducible NOS was hardly detected in the rat choroid. Total NOS activity in the retinal pigment epithelium (RPE)-choroid decreased in STZ-induced diabetic rats, while that in the neural retina was not. Neuronal NOS was supposedly responsible for the abovementioned decrease in the NOS activity. These results suggest that the OP delay in diabetes is underlain by hypoperfusion- ...▼ More

## Research Products (10 results)

AllOther

AllPublications

[Publications] Yutaka Shirao and Kazuo Kawasaki: "Electrical Responses from Diabetic Retina"Progress in Retinal and Eye Research. 17 (1). 59-76 (1998) ▼

[Publications] Yasunori Segawa, Yutaka Shirao, Tomomi Higashide,他6名: "Upregulation of Retinal Vascular Endothelial Growth Factor mRNAs in Spontaneously Diabetic Rats without Ophthalmoscopic Retinopathy"Ophthalmic Research. 30 (6). 333-339 (1998) ▼

[Publications] 河崎一夫、白尾 裕、瀬川安則、他21名: "視覚における情報処理機構 第102回日本眼科学会総会 宿題報告 律動様小波が関与する網膜内情報処理とその異常 ―糖尿病網膜症を中心に―"日本眼科学会雑誌. 102(12). 813-836 (1998) ▼

[Publications] 山田陽久、瀬川安則、浅井宏志、他6名: "食餌制限がOLETFラットの網膜電図に与える効果"OLETFラット研究会記録集. 4. 134-137 (1998) ▼

[Publications] Yutaka Shirao, Yasunori Segawa, Tomomi Higashide,他8名: "Biochemical and electrophysiological alterations in the OLETF rat retina"Obesity and NIDDM : Lessons from the OLETF Rat. 129-139 (1999) ▼

[Publications] Yutaka Shirao and Kazuo Kawasaki: "Electrical Responses from Diabetic Retina."Progress in Retinal and Eye Research. 17(1). 59-76 (1998) ▼

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[Publications] Akihisa Yamada, Yasunori Segawa, Hiroshi Asai, et al 6: "Effects of caloric restriction on the electroretinogram of OLETF rats."Proceedings of Annual Meeting for OLETF rat Researches. 4. 134-137 (1998) ▼

[Publications] Yutaka Shirao, Yasunori Segawa, Tomomi Higashide et al 8: "Biochemical and electrophysiological alterations in the OLETF rat retina."Obesity and NIDDM : Lessons from the OLETF Rat. 129-139 (1999) ▼

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