

# Investigation of prolactin-related vaso-inhibin in sera from patients with diabetic retinopathy

Jakob Triebel, Dirk Raddatz, Michael Huefner<sup>1</sup> and Giuliano Ramadori

European Journal of Endocrinology 161 345–353

Department of Gastroenterology and Endocrinology, Center of Internal Medicine, Georg-August-University, Robert-Koch-Straße 40, 37075 Göttingen, Germany and <sup>1</sup>Endokrinologikum Göttingen, Von-Siebold-Straße 3, Göttingen, Germany  
(Corresponding Author: J Triebel; Email: jakob.triebel@gmx.de)

## Abstract

**Objective:** In vitro experiments and in vivo studies on rodents demonstrate that N-terminal 14, 15, 16, 17, and 18 kDa fragments (prolactin-related vaso-inhibin, PRL-V) of human PRL are natural inhibitors of neovascularization in the retina and elsewhere. These N-terminal PRL fragments belong to a family of peptides named vaso-inhibins, which act as endogenous regulators of angiogenesis and vascular function. These observations led to the hypothesis that PRL-V could play a role in the pathophysiology of diabetic retinopathy in humans. The purpose of this study was to investigate whether patients with diabetes mellitus and diabetic retinopathy have aberrant concentrations of PRL-V in the circulating blood.

**Research design:** We performed a case-control study and developed a new technique to semiquantitatively determine PRL-V in serum samples from 48 male subjects. The case group consisted of 21 patients with diabetes mellitus and proliferative or non-proliferative diabetic retinopathy. The control group consisted of 27 healthy subjects with no history of diabetes mellitus.

**Methods:** For the detection of PRL-V, we developed a new analytical method, consisting of immunologic and laser-induced fluorescence techniques.

**Results:** The case group had significantly lower PRL-V serum concentrations than the control group ( $P=0.041$ ). There was no significant difference between patients with proliferative and those with non-proliferative diabetic retinopathy.

**Conclusion:** We conclude that given the antiangiogenic and antivasopermeability actions of PRL-V, the decreased serum levels of PRL-V in patients with diabetes mellitus could contribute to the development and progression of diabetic retinopathy.

## 1 Background

Patients with Diabetes Mellitus are at risk for angiogenesis-dependent complications such as proliferative diabetic retinopathy

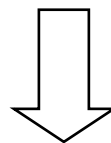


## 2 Objective

Detection and semi-quantitative measurement of the systemic levels of angiogenesis-inhibiting prolactin-related vaso-inhibin

N Full-length PRL C

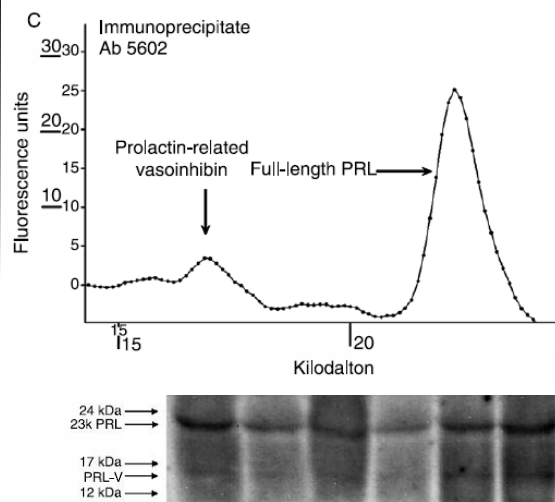
Proteases



N PRL-Vaso-inhibin

## 4 Methods

Immunoprecipitation and immunocomplex constituent analysis with laser induced fluorescence and western blot



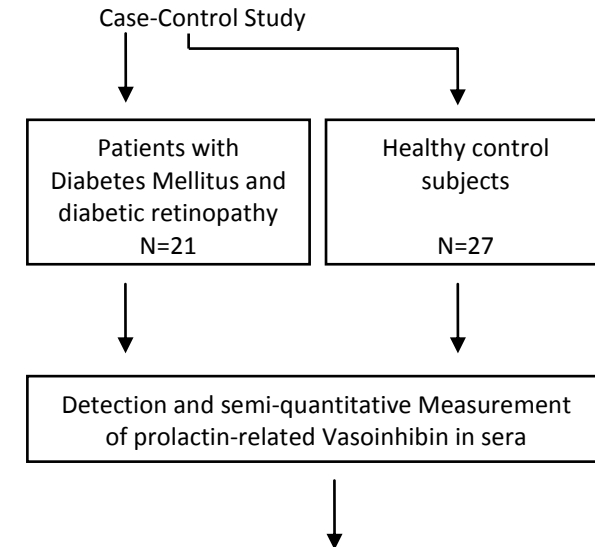
## 5 Results

The case group had significantly lower PRL-V serum concentrations than the control group ( $P=0.041$ ). There was no significant difference between patients with proliferative and those with non-proliferative diabetic retinopathy.

## 6 Conclusion

The decreased levels of prolactin-related Vaso-inhibin in sera from patients with diabetic retinopathy could contribute to the development and progression of diabetic retinopathy.

## 3 Research Design



Variable	Case group (n=21)	Control group (n=27)	P value
Serum prolactin levels			
Serum PRL-V (FU)	2.39 ± 0.59	3.64 ± 0.51	0.041
	Subgroup (RDP) (n=14)	Subgroup (RDS) (n=7)	
	2.51 ± 0.85	2.15 ± 0.56	> 0.05
Serum PRL (mIU/l)	233.5 ± 26.20	238.6 ± 19.38	> 0.05
		248.9 ± 27.49	> 0.05

