

# VWF & PROPEPTIDE ASSAY

New!

## For the quantitative detection of von Willebrand Factor (VWF) and VWF Propeptide in human plasma and the calculation of a propeptide:VWF ratio

### GENERAL INFORMATION

Von Willebrand Factor (VWF) is a multimeric, high molecular weight protein present in plasma that plays a pivotal role in successful recruitment and activation of platelets at the site of vascular injury. In addition, VWF serves as a carrier protein for the clotting factor, Factor VIII, protecting the Factor VIII from degradation.

Von Willebrand Disease (VWD) is caused by a qualitative or quantitative deficiency in VWF. Acquired von Willebrand Syndrome (AVWS) is a rare bleeding disorder associated with lympho and myeloproliferative disorders, solid tumors, immunologic and cardiovascular disorders,<sup>1</sup> and is similar to VWD in regards to laboratory findings and clinical manifestations. The diagnosis and subtyping of VWD and AVWS are based on multiple test results such as Factor VIII activity, VWF antigen levels, VWF activity, multimeric analysis of VWF, as well as the patient's bleeding history.<sup>1,2</sup>

The VWF propeptide is synthesized as part of a pro-VWF protein and is subsequently cleaved, stored and secreted in an equi-molar ratio with mature VWF.<sup>3</sup> The level of VWF propeptide in the circulation can be used as a marker of VWF synthesis.<sup>4</sup> In individuals with low VWF synthesis, the propeptide level is similarly decreased yielding a propeptide: VWF ratio near 1.0. In individuals with normal levels of VWF synthesis and decreased survival of VWF in circulation, an increased propeptide: VWF ratio is observed.<sup>4</sup> The quantitative VWF deficiency observed in Type 1 VWD can be caused by ineffective synthesis and storage or by a decrease in the half-life of the VWF in the circulation. Clinically it is important to recognize this enhanced clearance phenotype because the increased clearance of VWF can reduce the efficacy of desmopressin treatment in these patients.<sup>4,5,6</sup> The propeptide:VWF ratio has also been used in the diagnosis of AVWS where the propeptide level is usually normal or increased and the VWF level is reduced causing an increased propeptide:VWF ratio.<sup>7,8</sup>

### FEATURES AND BENEFITS

- Only commercially available kit for the measurement of VWF propeptide
- Also measures the VWF antigen level
- Quantitative
- Easy to use
- Cost-effective
- Up to 41 samples can be tested in duplicate in 90 minutes

### KIT COMPONENTS

- Microwell Strips coated with VWF-specific antibodies
- Microwell Strips coated with VWF Propeptide-specific antibodies
- VWF and Propeptide Calibrator
- Wash Buffer
- Sample, Conjugate and Antibody Diluent
- Biotinylated Detection Antibodies
- Streptavidin-HRP Conjugate
- Fluorescent Substrate System

### ORDER INFORMATION

CATALOG NO:	VP
DESCRIPTION:	VWF & Propeptide Assay
SIZE:	Maximum 41 Tests Per Kit
AVG SHELF LIFE:	2 Years
STORAGE:	Box A: <-15°C Box B: 2 to 8°C

For Research Use Only (US & Canada)  
For In Vitro Diagnostic Use / CE Marked (Europe)



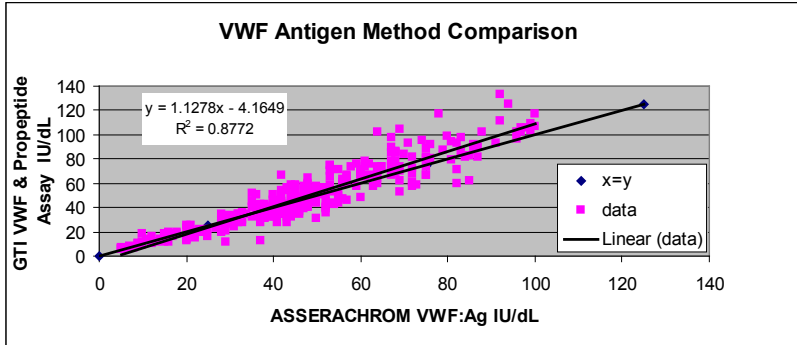
**GTI DIAGNOSTICS**

Good science starts with people.®

## METHOD COMPARISON

### Comparison of GTI VWF & Propeptide Assay to Diagnostica Stago ASSERACHROM® VWF:Ag Assay

The VWF antigen values obtained using the GTI VWF & Propeptide Assay were compared to a previously FDA cleared device; ASSERACHROM® VWF:Ag Assay by Diagnostica Stago. A total of 298 plasma samples including both normal donors and VWD patients were tested. The following graph shows the results of the linear regression analysis for VWF where the slope of the line was 1.13 with a 95% confidence interval of 1.08 to 1.18 and the intercept was a -4.16 with a 95% confidence interval of -6.72 to -1.61. There was good correlation and agreement between the two methods.

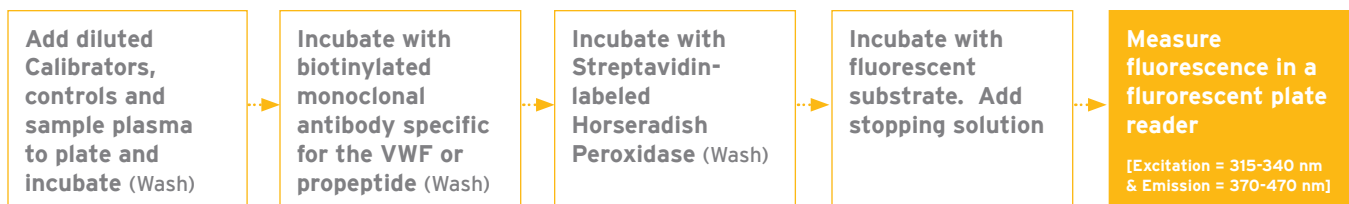


## CLINICAL CUTOFF

One hundred-fifteen Type 1 VWD patients diagnosed on the basis of VWF antigen level, ristocetin co-factor activity, and past bleeding history and 23 Type 1 VWD patients with increased clearance of VWF (Type 1C) diagnosed on the basis of VWF antigen level, ristocetin co-factor activity, past bleeding history, and the presence of a point mutation previously shown to cause increased clearance of VWF were tested.

Receiver operating characteristics (ROC) curve analysis was used to determine the diagnostic cutoff for increased clearance of VWF based on the values for the Propeptide:VWF ratio. Using a ratio of > 3.0 yielded 100.0% sensitivity, characterizing all known Type 1C patients correctly and yielded 95.7% specificity, where 5 Type 1 patients were characterized as Type 1C. Three of the 5 mischaracterized patients had Type O blood, one patient had Type A blood, and the blood group of the fifth sample was unknown. Since it has been demonstrated that patients with a Type O blood generally have a lower VWF level and correspondingly a higher propeptide:VWF ratio, we suggest the use of the following grey zone. Propeptide:VWF ratios of 3.0 - 4.1 may be due to increased VWF clearance or the result of a Type 1 VWD patient with Type O blood. Ratios of > 4.1 are indicative of Type 1C VWD regardless of blood group.

## PRINCIPAL OF THE PROCEDURE



## REFERENCES

1. Federici AB, Rand JH, Bucciarelli P, Budde U, van Genderen PJ, Mohori H, Meyer D, Rodighiero F, Sadler JE. "Subcommittee on von Willebrand Factor. Acquired von Willebrand syndrome: data from an international registry." *Thromb Haemost.* 2000, **84**: 345-349.
2. CLSI Guideline H51-A. Assays of von Willebrand Factor Antigen and Ristocetin Cofactor Activity; Approved Guideline. Vol. 22, No. 20. 2002.
3. Fay PJ, Kawai Y, Wagner DD, Ginsburg D, Bontron D, Ohlsson-Wilhelm BM, Chavin SI, Abraham GN, Handin RI, Orkin SH, Montgomery RR, Marder VJ. "Propolypeptide of von Willebrand factor circulates in blood and is identical to von Willebrand antigen II." *Science* 1986, **232**: 995.
4. Haberichter SL, Balistreri M, Christopherson P, Morateck P, Gavazova S, Bellissimo DB, Manco-Johnson MJ, Cox-Gill J, Motgomery, RR. "Assay of the von Willebrand factor (VWF) propeptide to identify patients with type 1 von Willebrand disease with decreased VWF survival." *Blood* 2006, **108**: 3344-3351.
5. Casonato A, Pontara E, Sartorello F, et al. "Reduced von Willebrand factor survival in type Vicenza von Willebrand disease." *Blood* 2002, **99**: 180-184.
6. Sztukowska M, Gallinaro L, Cattini MG, Pontara E, Sartorello F, Daidone V, Padrini R, Pagnan A, Casonato A. "Von Willebrand factor propeptide makes it easy to identify the shorter Von Willebrand factor survival in patients with type 1 and type Vicenza von Willebrand disease." *British Journal of Haematology* 2008, **143**: 107-114.
7. van Genderen PJ, Boertjes RC, van Mourik JA. "Quantitative analysis of von Willebrand factor and its propeptide in plasma in acquired von Willebrand syndrome." *Thromb Haemost* 1998, **80**: 495-498.
8. Scott JP, Vokac E, Foster PA, Kassay K, Montgomery RR. "The von Willebrand factor propolypeptide (vW AgII) as a marker of acquired von Willebrand syndrome." *Blood* 1993, **82**: 150a. 12-2-1993.



**GTI DIAGNOSTICS**

Good science starts with people.™

20925 Crossroads Circle, Suite 200  
Waukesha, WI 53186 USA

IN USA 800. 233 . 1843  
TEL 262 . 754 . 1000  
FAX 262 . 754 . 9831  
EMAIL [gti@gtidiagnostics.com](mailto:gti@gtidiagnostics.com)  
WWW [gtidiagnostics.com](http://gtidiagnostics.com)

DISTRIBUTED BY