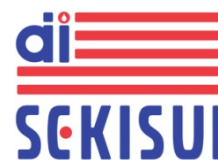


Activated Protein C (APC)



Diagnostic relevance

Activated protein C (APC) is a serine protease with anticoagulant, anti-inflammatory and anti-apoptotic functions. The active protein is generated from its precursor zymogen protein C (PC) on the surface of endothelial cells by an activation complex formed by thrombin and thrombomodulin (TM). APC released from the endothelial cell surface down-regulates thrombin formation by cleavage of the activated cofactors V and VIII, whereas APC still bound to the cell surface induces anti-inflammatory and cytoprotective signaling responses in endothelial cells.

A failure to generate sufficient amounts of APC is associated with a prothrombotic and a hyperinflammatory phenotype. The severity of the clinical symptoms depends on the residual APC activity. The prothrombotic phenotype is the leading symptom in milder forms of APC deficiency such as in heterozygous PC deficiency, whereas more severe forms of APC deficiency such as in homozygous PC deficiency are characterized by a thromboinflammatory phenotype. Acquired APC dysfunction is critically involved in the pathogenesis of several thromboinflammatory diseases including severe sepsis.

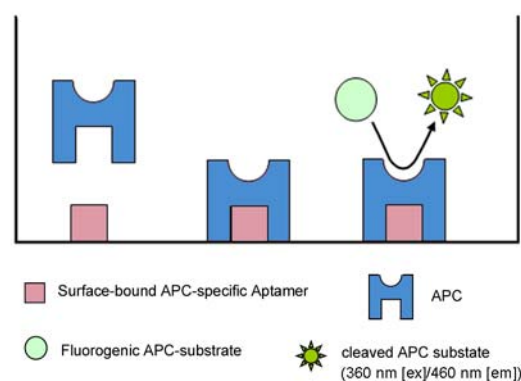
In spite of the important physiological functions of APC and its crucial role in the pathogenesis of a variety of diseases, plasma levels of APC are not considered in diagnostic or therapeutic decision making. One reason for this is the lack of an appropriate method allowing the measurement of APC plasma levels under practical laboratory conditions.

OLIGOBIND® APC assay

The newly developed OLIGOBIND® APC assay (product no. ADG855) allows the **direct quantification of activated Protein C in plasma from peripheral blood.**

To avoid pre-analytical inactivation of APC, special APC-blood collection tubes (product no ADG855T) are used for blood drawing.

Principle of the OLIGOBIND APC Assay



References

- Monitoring of plasma levels of activated protein C using a clinically applicable oligonucleotide-based enzyme capture assay. Müller J, et al., J Thromb Haemost. 2012 Mar;10(3):390-398.
- An exosite-specific ssDNA aptamer inhibits the anticoagulant functions of activated protein C and enhances inhibition by protein C inhibitor. Müller J, et al., Chem Biol 2009; 16: 442–451.

APC©190313

Product information OLIGOBIND® APC assayover

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OLIGOBIND[®] APC Activity Assay (# ADG855)



Description

The OLIGOBIND[®] APC activity assay is performed in 96-well microtiter plate format. Immobilized HS02-G52, a high-affinity APC-binding DNA aptamer, is used to capture APC from plasma samples. Since binding of the aptamer does not block the active center of APC, aptamer-captured APC can be easily quantified by hydrolysis rates of a sensitive fluorogenic peptide substrate. The use of this substrate, in conjunction with the specific binding of HS02-52G to APC, accounts for the unrivaled sensitivity and speed of the APC assay when compared with previously published assays for direct APC measurement.

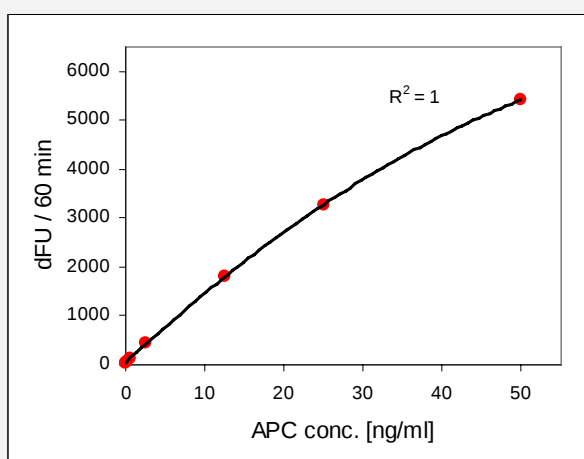
To prevent inactivation of APC prior to analysis, special APC-blood collection tubes are needed for blood drawing. Total assay time is less than six hours, allowing the utilization of the OLIGOBIND[®] APC in daily routine practice. While APC plasma levels in healthy individuals fell below the quantifiable range of the APC assay, levels substantially increased in patients undergoing hip replacement surgery reaching peak values of up to 12 ng per mL.

Taken together, the OLIGOBIND[®] APC assay is a powerful tool that allows sensitive measurement of activated Protein C in human plasma.

Principle of the assay

Stabilized plasma samples are added to microwells coated with a DNA-aptamer against activated Protein C. During an incubation period, APC present in the sample will bind to the aptamer coated to the wells. Following a washing step, a fluorogenic peptide substrate for APC is added to the microwells. Measuring the change of fluorescence (360_[exl]/460_[em] nm) over time and extrapolating the value with those of a standard curve determines the level of APC in the plasma sample.

Standard curve



Key Features

- **Format:** 96-well plate
- **Pre analytic:** Special blood collection tubes (Product no. ADG855T)
- **Sample Vol.:** 200 µl (duplicate analysis)
- **Assay Range:** 0 – 50 ng/ml
- **Assay time:** < 6 hours

Order numbers

OLIGOBIND [®] APC assay	ADG855
APC-blood collection tubes	ADG855T