

## Quantitative IgA Sandwich ELISA

### INTRODUCTION

ELISA (Enzyme Linked ImmunoSorbent Assay) provides a highly sensitive and precise method for the estimation of biological parameters. The method has the advantage of rapidly analyzing large numbers of samples. ELISA is used for detection, identification or quantification of a particular protein, as well as for discrimination (i.e. subtyping) between proteins.

The Anti-IgA Affibody<sup>®</sup> molecule is a specific affinity ligand that binds to human IgA and is well suited as capture reagent in a sandwich ELISA.

### RESULTS QUANTITATIVE ELISA

The Anti-IgA Affibody<sup>®</sup> molecule can be used as capture reagent in a sandwich ELISA in combination with a goat anti-IgA antibody as the detection reagent. Titration of IgA gives a sigmoid curve with a sensitivity of 0.2 ng IgA/ml (defined as two times background value).

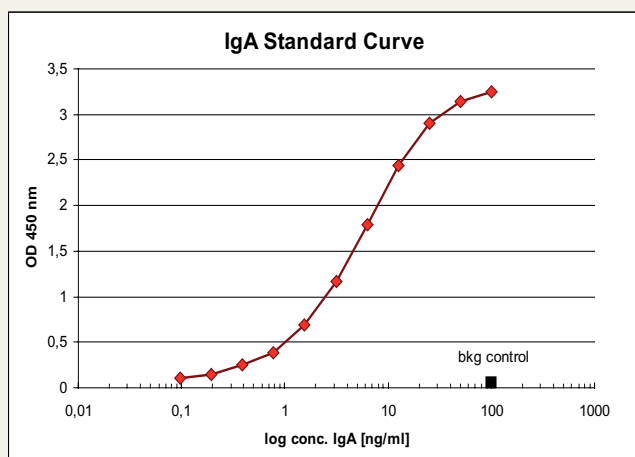


Fig. 1. IgA standard curve. Standard IgA was titrated on Anti-IgA Affibody<sup>®</sup> molecule coated plates with a sensitivity of 0.2 ng/ml.

### ANALYSIS OF IgA CONCENTRATION IN DEPLETED SERUM

The remaining IgA in samples from serum, depleted from IgA by passage through an Anti-IgA Affibody<sup>®</sup> molecule coupled column, was analyzed using the Anti-IgA Affibody<sup>®</sup> ELISA. Concentration of IgA in flow through samples from 60  $\mu$ l, 0.2 ml and 0.4 ml depleted plasma was analyzed and the percentage of achieved depletion was calculated. The data is presented in table 1.

Plasma Sample Volume ( $\mu$ l)	IgA Concentration after Depletion ( $\mu$ g/ml)	Achieved IgA Depletion (%)
60	0.09	99.9
200	2.0	98.5
400	12.0	93.5

Table 1. Depletion efficiency. The concentration of IgA in the plasma sample was 1.3 mg/ml before depletion. The IgA values shown after depletion (flow through) were corrected for an increase in volume.

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### MATERIALS AND BUFFERS REQUIRED

**Coating ligand:** Anti-IgA Affibody<sup>®</sup> molecule, unconjugated (Affibody cat no 10.1150.01.0005)

**Coating buffer:** 15 mM Na<sub>2</sub>CO<sub>3</sub>, 35 mM NaHCO<sub>3</sub>, pH 9.6

**ELISA plates:** 96-well, flat bottomed, high protein binding plates (Costar cat no 3690)

**PBST:** 2.68 mM KCl, 1.47 mM KH<sub>2</sub>PO<sub>4</sub>, 137 mM NaCl, 8.1 mM Na<sub>2</sub>HPO<sub>4</sub>, pH 7.4, 0.05% Tween 20

**Blocking buffer:** PBS + 0.5% casein

**hIgA:** (Bethyl cat no P80-102)

**Anti-IgA antibody:** Goat anti-IgA antibody (Sigma cat no 1-0884)

**HRP conjugate:** Rabbit anti-goat IgG (Dako cat no P0449)

**Substrate:** ImmunoPure<sup>®</sup> TMB Substrate Kit (Pierce cat no 34021)

**Stop buffer:** 2 M H<sub>2</sub>SO<sub>4</sub>

### PROTOCOL

1. Dilute the Affibody<sup>®</sup> molecule in coating buffer to a final concentration of 5.0 µg/ml. Coat a flat-bottomed, high protein binding 96-well plate by adding 50 µl of the diluted Affibody<sup>®</sup> molecule per well.
2. Cover the plate with an adhesive plastic and incubate at +4°C over night.
3. Remove the coating solution and wash the plate twice with deionized water. Use an automatic ELISA washer or flick the plate over a sink. The remaining drops can be removed by dabbing the plate on a paper towel.
4. Block the remaining protein binding sites by incubation with blocking buffer. Add 100 µl per well, cover the plate with plastics and incubate for 1 hour at room temperature.
5. Empty the plate without washing.
6. Add 50 µl per well of sample and negative control diluted in PBST. Use purified IgA as standard. The dilutions should be determined by the user (see application note for information about the concentration interval).
7. Cover the plate with plastics and incubate for 1 hour at room temperature.
8. Wash the plate 4 times with PBST.
9. Dilute the goat anti-IgA antibody to a final concentration of 1 µg/ml in PBST. This antibody works well in pair with the Anti-IgA Affibody<sup>®</sup> molecule. Any other anti-IgA antibody has to be tested by the user.
10. Add 50 µl antibody per well, cover the plate with plastics and incubate for 1 hour at room temperature.
11. Wash the plate 4 times with PBST.
12. Dilute HRP conjugated rabbit anti-goat IgG 1:10 000 in PBST. Add 50 µl per well, cover the plate with plastics and incubate for 1 hour at room temperature.
13. Wash the plate 4 times with PBST.
14. Add 50 µl per well of ImmunoPure<sup>®</sup> TMB Substrate Kit prepared as described by the manufacturer. Stop the reaction after maximum 30 minutes with stop buffer, 50 µl per well.
15. Measure the absorbance at 450 nm using a microtiter-plate spectrophotometer.
16. Plot OD values against the concentration to obtain a standard curve.
17. Use the standard curve to determine the concentration of IgA in the sample.

### LIMITATIONS

Warranty: Affibody<sup>®</sup> products are warranted to meet stated product specifications and to confirm to label descriptions when used and stored properly. Unless otherwise stated, this warranty is limited to one year from date of sales for products used, handled and stored according to Affibody AB's instructions. Affibody AB's sole liability is limited to replacement of the product or refund of the purchase price. Affibody<sup>®</sup> products are supplied for research use only. They are not intended for medicinal, diagnostic or therapeutic use. Affibody<sup>®</sup> products may not be resold, modified for resale or used to manufacture commercial products without prior written approval from Affibody AB.

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