



Theophyllin



Enzym-linked immunosorbent assay (ELISA) for determination of theophyllin and its metabolites in serum or plasma.

Theophyllin is a xanthin-derived alkaloid which is used for therapy of bronchial asthma, other respiratory obstructions or in case of apnea of premature babies or newborns, respectively. Theophyllin determination is recommended to document successful therapy and to exclude adverse reactions.

Quantitative determination of theophyllin concentration in serum is realised through competitive enzyme linked immunosorbent (ELISA). Theophyllin competes with theophyllin-conjugate for limited amount of antibody binding sites localized on the surface of microwell bottom. This test starts with pipetting sample and calibrator solutions into corresponding wells followed by adding theophyllin-enzym-conjugate. Until reaching reaction balance patient theophyllin or theophyllin-enzym-conjugate, respectively, binds to antibodies immobilized to the bottom of microwells. Then unbound molecules are removed via washing step. Reaction of theophyllin-enzym-conjugate is visualized by addition of enzyme substrate. Modification of the substrate catalyzed by the enzyme leads to blue coloration of the solution. This reaction finally is stopped by adding acid stopping solution which leads to yellow coloration. Color intensity is inversely proportional to theophyllin concentration in the sample. Microwell plate is measured at 450 nm (620 nm reference wavelength) and theophyllin concentration is determined via calibration curve.

Kit Components:

1. Conjugate:

Theophyllin-enzym-conjugate (ready to use) in reaction buffer

2. Washing buffer (concentrate):

Washing buffer (on PBS basis)

3. Substrate:

Substrate solution

4. Stopping solution:

Stopping solution (0.1 M H₂SO₄)

5. Calibrators (standard series):

Theophyllin calibrator solutions (2.5 / 5 / 10 / 15 / 20 und 30 µg/ml)

6. Microwell plate:

Microwell plate coated with anti-theophyllin antibodies



Literature:

1. Alzakar R., et al., Allergy Asthma Proc. 4, 324-30 (2010)
2. Moon H., et al., Exp Mol Med. 42, 47-60 (2010)
3. Kawakami A, et al., Allergy Asthma Proc. 29, 322-8 (2008)