



AssayMax Human Angiotensin II ELISA Kit

Catalog Number EA3501-1

Introduction

Angiotensin II, a main effector peptide in the renin-angiotensin system, acts as a growth promoting and angiogenic factor via type-1 angiotensin II receptors (1). Angiotensin II is suggested to involve in the regulation of cell proliferation (2), angiogenesis (3), inflammation (4) and cancer (1).

Principal of the Assay

The AssayMax Angiotensin II ELISA kit employs a quantitative competitive sandwich enzyme immunoassay technique that measures Angiotensin II in less than 3 hours. A polyclonal antibody specific for Angiotensin II has been pre-coated onto a 96-well microplate with removable strips. Angiotensin II in standards and samples is competed by a biotinylated Angiotensin II sandwiched by the immobilized antibody and streptavidin-peroxidase conjugate. All unbound material is then washed away and a peroxidase enzyme substrate is added. The color development is stopped and the intensity of the color is measured.

Caution and Warning

- This kit is for research use only.
- The kit should not be used beyond the expiration date.
- The Stop Solution is an acid solution.

Reagents

- **Angiotensin II Microplate:** A 96-well polystyrene microplate (12 strips of 8 wells) coated with a polyclonal antibody against Angiotensin II.
- **Sealing Tapes:** Each kit contains 3 pre-cut, pressure-sensitive sealing tapes that can be cut to fit the format of the individual assay.
- **Angiotensin II Standard:** Angiotensin II in a buffered protein base (6 ng, lyophilized).
- **Biotinylated Angiotensin II:** 1 vial, lyophilized.
- **EIA Diluent Concentrate (10x):** A 10-fold concentrated buffered protein base (30 ml).
- **Wash Buffer Concentrate (20x):** A 20-fold concentrated buffered surfactant (30 ml).
- **Streptavidin-Peroxidase Conjugate (SP Conjugate):** A 100-fold concentrate (90 μ l).
- **Chromogen Substrate:** A ready-to-use stabilized peroxidase chromogen substrate tetramethylbenzidine (8 ml).
- **Stop Solution:** A 0.5 N hydrochloric acid to stop the chromogen substrate reaction (12 ml).

Storage Condition

- Store unopened kit at 2-8⁰C up to expiration date.
- Opened EIA Diluent may be stored for up to 1 month at 2-8⁰C. Store reconstituted reagents at -20⁰C or below.
- Opened unused strip wells may return to the foil pouch with the desiccant pack, reseal along zip-seal. May be stored for up to 1 month in a vacuum desiccator.

Other Supplies Required

- Microplate reader capable of measuring absorbance at 450 nm
- Pipettes (1-20 μ l, 20-200 μ l, 200-1000 μ l and multiple channel)
- Deionized or distilled reagent grade water

Sample Collection, Preparation and Storage

- **Plasma:** Collect plasma using one-tenth volume of 0.1 M sodium citrate as an anticoagulant. Centrifuge samples at 2000 x g for 10 minutes and assay. Remove plasma and assay. The undiluted samples can be stored at -20⁰C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **Serum:** Samples should be collected into a serum separator tube. After clot formation, centrifuge samples at 2000 x g for 10 minutes. Remove serum and assay. The undiluted samples can be stored at -20⁰C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **Cell Culture Supernatants:** Centrifuge cell culture media at 2000x g for 10 minutes to remove debris. Collect supernatants and assay. The undiluted samples can be stored at -20⁰C or below for up to 3 months. Avoid repeated freeze-thaw cycles.

Reagent Preparation

- Freshly dilute all reagents and bring all reagents to room temperature before use. If crystals have formed in the concentrate, mix gently until the crystals have completely dissolved.
- **EIA Diluent Concentrate (10x):** Dilute the EIA Diluent 1:10 with reagent grade water. Store for up to 1 month at 2-8⁰C.
- **Standard Curve:** Reconstitute the 6 ng of Angiotensin II Standard with 1.5 ml of EIA Diluent to generate a stock solution of 4 ng/ml. Allow the standard to sit for 10 minutes with gentle agitation prior to making dilutions. Prepare triplicate standard points by serially diluting the standard solution (4 ng/ml) twofold with equal volume of EIA Diluent to produce 2, 1, 0.5, 0.25, and 0.125 ng/ml solutions. EIA Diluent serves as the zero standard (0 ng/ml). Any remaining solution should be frozen at -20⁰C.

Standard Point	Dilution	[ANGII] (ng/ml)
P1	Standard (4 ng/ml)	4.000
P2	1 part P1 + 1 parts EIA Diluent	2.000
P3	1 part P2 + 1 parts EIA Diluent	1.000
P4	1 part P3 + 1 parts EIA Diluent	0.500
P5	1 part P4 + 1 parts EIA Diluent	0.250
P6	1 part P5 + 1 parts EIA Diluent	0.125
P7	EIA Diluent	0.000

- **Biotinylated Angiotensin II (1x):** Dilute Biotinylated Angiotensin II with 4 ml EIA Diluent to produce a working solution. Allow the biotin to sit for 10 minutes with gentle agitation prior to use. Any remaining solution should be frozen at -20°C.
- **Wash Buffer Concentrate (20x):** Dilute the Wash Buffer Concentrate 1:20 with reagent grade water.
- **SP Conjugate (100x):** Spin down the SP Conjugate briefly and dilute the desired amount of the conjugate 1:100 with EIA Diluent. Any remaining solution should be frozen at -20°C.

Assay Procedure

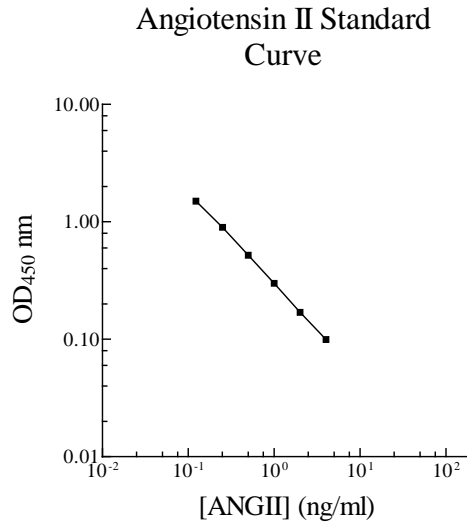
- Prepare all reagents, working standards and samples as instructed. Bring all reagents to room temperature before use. The assay is performed at room temperature (20-30°C).
- Remove excess microplate strips from the plate frame and return them immediately to the foil pouch with desiccant inside. Reseal the pouch securely to minimize exposure to water vapor and store in a vacuum desiccator.
- Add 25 µl of standard and/or sample per well, and immediately add 25 µl of Biotinylated Angiotensin II to each well (on top of the standard or sample). Cover wells with a sealing tape and incubate for two hours at room temperature. Start the timer after the last sample addition.
- Wash five times with 200 µl of Wash Buffer. Invert the plate and decant the contents, and blot it on absorbent paper towel to completely remove liquid at each step.
- Add 50 µl of Streptavidin-Peroxidase Conjugate to each well and incubate for 30 minutes. Turn on the microplate reader and set up the program in advance.
- Wash five times with 200 µl of Wash Buffer.
- Add 50 µl of Chromogen Substrate per well and incubate for about 10 minutes or till the optimal blue color density develops. Gently tap plate to ensure thorough mixing and break the bubbles in the well with pipette tip.
- Add 50 µl of Stop Solution to each well. The color will change from blue to yellow.
- Read the absorbance on a microplate reader at a wavelength of 450 nm immediately.

Data Analysis

- Calculate the mean value of the triplicate readings for each standard and sample.
- To generate Standard Curve, plot 4-parameter graph or semi-log graph using the Angiotensin II standard concentrations on the x-axis and the corresponding mean 450 nm absorbance on the y-axis. The best-fit line can be determined by regression analysis using log-log or four-parameter logistic curve-fit.
- Determine the unknown sample concentration from the Standard Curve and multiply the value by the dilution factor.

Standard Curve

- The curve is provided for illustration only. A standard curve should be generated each time the assay is performed.



Performance Characteristics

- This kit can be used for human, rat, or mouse samples.
- The minimum detectable dose of Angiotensin II is typically 50 pg/ml.
- Intra-assay and inter-assay coefficients of variation were 5.5% and 7.5% respectively.

Cross-Reactivity

Species	% Cross Reactivity
Beagle	> 50
Bovine	> 80
Monkey	100
Mouse	100
Rat	100
Swine	100

	% Cross Reactivity
Angiotensin I	20
Angiotensin III	30

References

- Ino K *et. al.* (2006) *Br J Cancer* 94(4):552-60
- Fischer JW *et. al.* (2001) *Cardiovasc Res.* 51(4):784-91
- Sarlos S (2003) *Am J Pathol.* 163(3): 879-87
- Ogawa S (2006) *Hypertension* 47(4): 699-705

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