

Tau protein IMR Reagent

REF MF-TAU-0060



For *In Vitro* Diagnostic & Professional Use

Intended Use

Use Tau protein IMR Reagent only with the XacPro-S System (MagQu Co., Ltd.). The reagent is used to quantitatively measure Tau protein in human fluid specimen, such as serum.

Summary & Explanation

Tau protein is a microtubule-associated protein and is abundant in nervous system. Tau protein can maintain the structure of neuron cells and support the transport of substance. When tau proteins become defective, It will result in the self-assembly of tangles in brain and increased some neurodegenerative diseases including Alzheimer's disease (AD)、Pick's disease、Parkinson's disease (PD)、Progressive supranuclear palsy(PSP) and Corticobasal degeneration (CBD).^{1,2}

Principles of Test

The Tau protein IMR Reagent is designed for rapid quantifying Tau protein by Immuno Magnetic Reduction (IMR). We conjugated the antibody on the surface of around 50 nm-in-diameter Fe₃O₄ magnetic particles. When the antibodies on the surface bind with Tau protein, the magnetic particles form clusters. Therefore, the ac susceptibility (Xac) of magnetic particles would be reduced in the adding ac magnetic field. By measuring the reduction of Xac, we can quantify Tau protein in the sample easily, rapidly, and accurately.³

Reagents

Tau protein IMR reagent4 x 1 mL (50 tests)

Storage Conditions & Stability

Storage reagent at 2 ~8 °C, the shelf life is 6 months.

Statement of Warnings

- Do not be frozen.
- Please keep away from events with strong magnetism.
- For *in vitro* diagnostic use only.
- For professional use only.
- Do not use the reagent when it has leaved 2~8 °C more than 24 hours or it has something precipitated.

Reagent Preparation

Please use the Tau protein IMR reagents at room temperature (15-30 °C).

Specimen Collection & Preparation

- Collect all blood samples by wearing protective equipment and following universal precautions for venipuncture. Whole blood is collected in an EDTA vacutainer blood collection tube (purple top).
- Invert the tube smoothly 5-10 times and make sure the whole blood specimen is mix well with EDTA.
- Centrifuge the tube for 15 minutes at 2,500 x g at room temperature to separate the plasma from the blood cells.
- After centrifugation, plasma is taken by pipetman and start to measure. If the plasma sample is not use immediately, it must equally divide into four 1.5 ml microcentrifuge tubes or other tubes. Plasma specimens are labeled and deep frozen (-20 °C or colder) immediately until needed. Avoid repeated freezing or thawing.

Procedure

- Add 40 µL sample to glass testing tube.
- Add 80 µL magnetic reagent to glass tube, and mix well.
- Put the glass tube on the measuring site of IMR analyzer.
- Wait for the end of reaction and read the result.
- Use the table for converting to the concentration of Tau protein as reference.

IMR(%) vs [Tau]			
IMR(%)	[Tau] pg/mL	IMR(%)	[Tau] pg/mL
2.92	0.12	4.51	20.45
2.95	0.14	4.58	24.28
2.98	0.17	4.65	28.83
3.02	0.20	4.72	34.23
3.05	0.24	4.80	40.64
3.09	0.28	4.87	48.25
3.13	0.33	4.94	57.28
3.17	0.39	5.01	68.01
3.21	0.47	5.08	80.74
3.26	0.56	5.15	95.86
3.30	0.66	5.22	113.81
3.35	0.78	5.29	135.13
3.40	0.93	5.36	160.43
3.45	1.11	5.43	190.47
3.55	1.56	5.56	268.47
3.61	1.85	5.63	318.75
3.66	2.20	5.69	378.43
3.72	2.61	5.76	449.29
3.78	3.10	5.82	533.42
3.84	3.68	5.88	633.30
3.90	4.36	5.94	751.88
3.96	5.18	5.99	892.67
4.03	6.15	6.05	1059.82
4.09	7.30	6.10	1258.27
4.16	8.67	6.15	1493.88
4.23	10.29	6.20	1773.61
4.30	12.22	6.25	2105.71
4.37	14.51	6.30	> 2500

Results

By using XacPro-S, we can get two signals: one is the AC signal before the reaction (Xac_0) and the other is the AC signal after reaction (Xac). Then we can have the IMR (%) through two signal by following function :

$$IMR(\%) = \frac{Xac_0 - Xac}{Xac_0}$$

IMR (%), as functions of Tau protein concentration ϕ_{TAU} are explored and are found to follow the logistic function:

$$IMR(\%) = \frac{A - B}{1 + (\frac{\phi_{TAU}}{\phi_0})^\gamma} + B$$

where A, B, ϕ_0 , and γ are fitting parameters. For TAU, A = 2.28, B = 7.34, ϕ_0 = 39.03, and γ = 0.33. The concentration of TAU protein can be available by following equation. And you can find the table for converting to the concentration of TAU as reference.

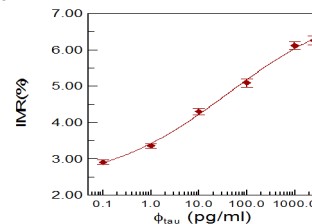


Fig.1 The IMR standard curve of TAU.

Limitations

- The analytical range of reagent is from 0.002 to 2500 pg/mL. When the specimen with Tau protein > 2500 pg/mL is to be determined, carry out the following procedures to obtain the accurate concentration. Dilute the specimen, re-assay, and multiply the assayed Tau protein value by the dilution factor.
- Reagents should be used before the expiration date printed on the kit label.
- Data is based upon human plasma sample.
- Do not use the plasma sample when it has leaved -20 °C more than 2 hours or it has something precipitated.
- Glass testing tubes are single use only.

References

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