Indirect immunofluorescence (IIFT) is a simple and modern method that enables highly sensitive, monospecific detection of anti-glutamate receptor (type NMDA) antibodies by means of a recombinant cell line transfected with expression constructs for the receptor subunit NR1.

**Clinical significance:** Antibodies against glutamate receptors (type NMDA) are specific markers for anti-NMDA receptor encephalitis, an inflammatory encephalopathic autoimmune disease which was first described in 2007 in patients with ovarian tumours and is currently a still widely underdiagnosed disease.

The disease often starts with a flu-like preliminary stage, followed by psychosomatic symptoms such as anxiety, excitement, strange behaviour, delusions and hallucinations. A large proportion of patients end up in psychiatric therapy. Within a few weeks epileptic attacks and catatonia-like consciousness disorders follow. Many patients have ovarian tumours (teratoma), which amongst other things contain nerve cells. In these patients, anti-NMDA receptor encephalitis is a paraneoplastic syndrome.

The serum and CSF of patients with anti-NMDA receptor encephalitis are autoantibodies directed against the extracellular domain of the receptor NR1 subunit. These are not identical in older female patients, in women without teratoma, in men (some with teratoma of the testis) and in children. Prognosis for patients is improved with appropriate immunomodulatory therapy, and, in PNS, tumour detection and resection as early as possible. In around 75% of cases a substantial regression of symptoms can be achieved. However, 25% of patients die or suffer from severe neurological deficits. Survivors have memory loss (amnesia) for the duration of the illness, and there is a risk of relapses of the encephalitis syndrome, the latter in particular when the tumour is removed too late or not at all or if no tumour could be found.

**Application of the Anti-Glutamate Receptor (Type NMDA) IIFT:** Diagnosis of anti-NMDA receptor encephalitis is based on a combination of the characteristic clinical picture, with supporting results from brain MRT, EEG and CSF analysis if necessary, and the detection of anti-glutamate receptor (type NMDA) antibodies in serum/CSF, which are directed against the NR1 subunit of the receptor. Infectious encephalitis (especially HSV) and other autoimmune aetiologies (limbic encephalitis) and in suspected cases of limbic encephalitis. When a positive serological result is obtained a comprehensive teratoma investigation should be undertaken.

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**EUROIMMUN IFFT**

**Infectious Serology**

**EUROIMMUN IIFT**

**Anti-Glutamate Receptor (Type NMDA) IIFT**

**Test principle:** The test system exclusively serves for the in vitro determination of human antibodies in human serum, plasma or CSF. The determination can be performed qualitatively or quantitatively. BIOCHIPS are incubated with diluted patient samples. In the case of positive reactions, specific antibodies of the classes IgA, IgG and IgM will bind to the antigens. In a second step, the attached antibodies are stained with fluorescein-labelled anti-human antibodies and made visible with the fluorescence microscope.

**Test procedure:** EUROIMMUN BIOCHIP slides are incubated using the proprietary TITERPLANE Technique. This technique enables multiple samples to be incubated next to each other and simultaneously under identical conditions. Results are evaluated by fluorescence microscopy.

**Intra-assay reproducibility:** Ten determinations for each of two characterised samples were incubated in parallel. The deviation in the fluorescence intensity of the IIFT amounted to no more than ±1 intensity levels for all samples.

**Inter-assay reproducibility:** Two characterised samples were incubated in duplicate on at least 2 different days in 5 test runs. In quantitative evaluation of results, no deviation in the fluorescence intensity was found.

**Sensitivity and specificity:** The clinical sensitivity and specificity of the test system are 100%. Samples from patients with Anti-NMDAR encephalitis (n = 39), patients with other encephalitides (n = 31) and healthy blood donors (n = 100) were investigated. Reference: Wandinger, Dalmau et al., From Pathogenesis to Therapy of Autoimmune Diseases. Autoantigens, Autoantibodies, Autoimmunity 6:434-435, Pabst Science Publishers (2009)

**Technical data:**

- **Antigen substrate:** Transfected cells and non-transfected cells (EU 90)
- **Sample dilution:** Serum or plasma. Qualitative: 1:10, CSF: undiluted quantitative: 1:100/1000 etc.
- **Conjugate:** IgG
- **Test procedure:** 30 min (sample) / 30 min (conjugate). Room temperature.
- **Microscopy:** Objective 40x, excitation filter: 488 nm, colour separator: 510 nm, light source: EUROIMMUN LED or mercury vapour lamp, 100 W
- **Reagents:** Ready for use, with the exception of the PBS Tween buffer.
- **Stability:** Stable at +2°C to +8°C for 18 months after the date of manufacture.
- **Test kit format:** 10 or 20 slides, each containing 3, 5 or 10 test fields. Kits include all necessary reagents.
- **Order no.** FA 112d-####-51
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  - FA 111m-3: hippocampus, rat cerebellum, rat/NMDA-R/EU 90