

## Soluble Transferrin Receptor (sTfR), for Turbidimetry

### General Information: structure, function ...

Cellular uptake of circulating iron (Fe) bound to transferrin (Tf) is a process mediated by a specific membrane receptor for Tf, called the Transferrin Receptor (TfR). TfR is found in virtually all the nucleated cells and at significantly high levels in the erythroid precursors (erythroblasts and reticulocytes), where about 80% of the total TfR can be found, as well as in the placenta and liver. TfR is a transmembrane glycoprotein, mostly extracellular, consisting of two identical subunits linked together by disulphide bonds, with a combined molecular weight of 180 kDa. The Soluble (or serum) Receptor of Transferrin (sTfR), also called free TfR, is the monomeric truncated extracellular part of TfR (approx. 85 kDa), which circulates in serum bound to Transferrin.

The amount of cellular TfR is proportional to cellular needs for iron and is modulated by intracellular iron status and erythropoietic activity. It thus increases with iron deficiency and raised erythropoiesis, while it decreases in situations of medullary aplasia or iron overload. Serum sTfR correlates with the total amount of cellular TfR in the body.

### Clinical Significance

sTfR is a good marker in the diagnosis of iron deficiency. The Joint WHO/CDC Technical Consultation on Assessment of Iron Status at Population Level (Geneva, April 2004) had concluded that measurement of both serum Ferritin (Ft) and sTfR provided the best approach for estimating the iron status of populations.

sTfR enables evaluation of erythropoiesis without the need for cytological study of the bone marrow, as long as iron deficiency is excluded. Thus, it is helpful in managing response to erythropoietin treatment (EPO), and it has also been proposed for use in anti-doping control.

The concentration of sTfR increases significantly and at an early stage in patients suffering from iron deficiency. Because it does not act as an acute phase reactant, it is especially helpful in the differential diagnosis of iron-deficiency anaemia and secondary anaemia from chronic disorders (not caused by cancer) in the presence of acute or inflammatory conditions which affect Ferritin measurements (commonly seen in elderly patients for example). Reports suggest that the sTfR/Log(Ft) ratio results in higher sensitivity and specificity of differentiation with respect to the individual magnitudes.

### Assay Performances and Characteristics

- ➔ **Turbidimetric Immunoassay (TIA)**, enhanced with polystyrene particles, for their use on Clinical Chemistry automatic analyzers
- ➔ Ready-to-use Reagents, prediluted Calibrators and two level Controls.
- ➔ No lipid interference at 500 mg/dl.
- ➔ Standardized to the *WHO's Reference Reagent Recombinant Soluble Transferrin Receptor (rsTfR)* (code: 07/202).
- ➔ No Antigen Excess up to more than 10 times the upper assay range.

### Catalogue

## 3diag - sTfR - Tia Kit

REF TD-42694

▽ 100 test

EAN/GTIN: 8434477310096

**Contains** Reagents, Calibrators and Controls

Also available for other analytical platforms. For further information, please contact the Customer Support Service at [support@3diag.com](mailto:support@3diag.com)