

FITC-DEAE-dextran

Chemical names: FITC-Diethylaminoethyl-dextran
Fluorescein-thiocarbamoyl-(O-2-diethylaminoethyl)-dextran

Trade name: FITC-DEAE-dextran

CAS nr: N/A

Structure:

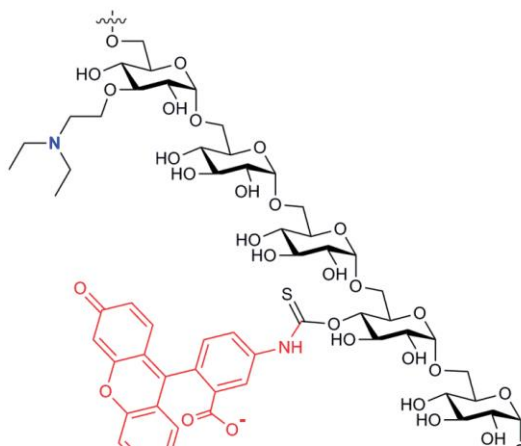


Fig. 1. Structural representation of FITC-DEAE-dextran.

Properties

FITC-DEAE-dextran is supplied as a yellow powder which is freely soluble in water or electrolyte solutions. The rate of dissolution will depend on the particle size and structure and it is advisable to add the powder slowly with vigorous stirring – for high molecular weight products the water may be heated. The DS (FITC) lies between 0.001 - 0.020 and the limits for nitrogen content are 3-5% - corresponding to about one DEAE-substituent per three glucose units. The synthesis introduces two types of DEAE-substituents into the dextran chain (see structure above). The predominant substituent is the single tertiary group, but this reacts further particularly at higher DS to yield a “tandem” group containing a quaternary amine as well as the tertiary amine.

Spectral data

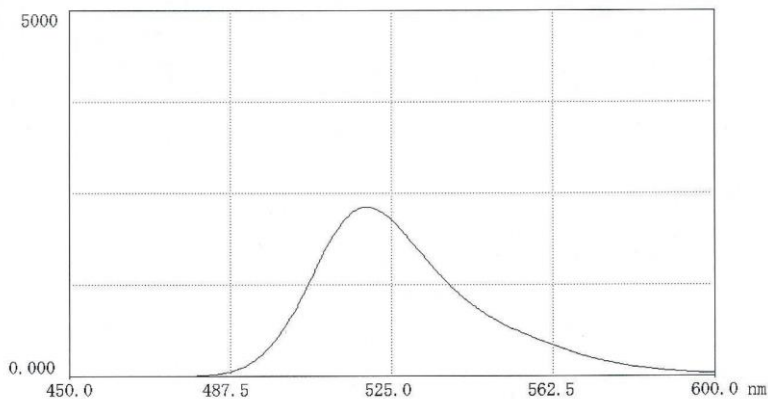


Fig. 1. Fluorescence scan of FITC-DEAE-dextran in 0.025M borate pH 9.0 (10mg in 50 ml buffer). Excitation 495nm; Emission 520nm.

Storage and Stability

The powder is stable at room temperature for more than three years providing it is stored in well-sealed containers in the dark. In solution, FITC-DEAE-dextran should not be stored at pH>8 for extended periods.

Applications

FITC-DEAE-dextran will possess many of the properties shown by the parent DEAE-dextran but will also display fluorescence to permit traceability. Some of the applications of DEAE-dextran are given below:

- As adjuvant for vaccines
- Enhances uptake of protein and nucleic acids by cells – transfection techniques and viral infectivity
- For stabilisation of proteins (enzymes)

FITC-DEAE-dextran has been used to study delivery of positively charged molecules into nucleated cells via the perforin pore (1). The permeability of FITC-DEAE-dextran, FITC-dextran and FITC-dextran sulphate through nasal mucosa were compared in a study of absorption promoters (2).

References

1. S.E. Stewart, S.C. Kondos, A.Y. Matthews et al., The perforin pore facilitates the delivery of cationic cargoes, *J Biol Chem*, 289(2014), 9172–81.
2. N. Uchida, Y. Machida, Y. Machida et al., Influence of bile acids on the permeability of insulin through the nasal mucosa of rabbits in comparison with dextran derivatives, *Int J Pharmaceut*, 74(1991), 95–103.