

Spectrofluorometric Determination of Alpha Fetoprotein in different serum samples of Liver Cancer by Tb-acetyl acetone complex embedded in Polymethylmethacrylate optical sensor

A simple, precise and sensitive method in which, Tb-acetyl acetone (Tb-ACAC) complex embedded in polymethylmethacrylate (PMMA) is used for the early diagnosis of liver cancer. The diagnosis process depends on the assessment of the concentration of alpha fetoprotein (AFP) in the serum samples of different liver patients. The Tb-acetyl acetone (Tb-ACAC) embedded in PMMA has strong emission band at 545 nm after excitation at 350 nm in ethanol. The assessment of alpha fetoprotein (AFP) depends on the quenching of the emission band at 545 nm in ethanol by the alpha fetoprotein (AFP). The calibration plot was achieved over the concentration 1-550 ng/mL with a correlation coefficient of 0.99 and a detection limit of 0.5 ng/mL. The method was used satisfactorily for the diagnosis of liver cancer in a number of serum samples collected from various patients and health state; healthy (≤ 10 ng/mL) and HCC (400–550 ng/mL).