



Effect of an Antibiotic on the Stability of Injectable Emulsions

Application

Pharmaceutics

Objective

Study the effect of addition of antibiotic on the stability of injectable emulsions

Device

TURBISCAN® Classic

INTRODUCTION

The injectable lipid emulsions are dispersions made of purified natural oil (soya, sesame, olive, cod-liver oil *etc.*) in water. The emulsification is made with natural emulsifiers (e.g. egg or soya lecithins) or/and synthetic emulsifiers (e.g. glycerol monostearate).

These emulsions are used for therapeutic nutrition in order to transport medicines or liposoluble drugs, instead of inorganic solvents.

These emulsions must be stable with respect to phase separation as a function of time, and uniform particle size even after being stirred (droplets size less than 5µm). But, some constituents may destabilise these emulsions.

So, the formulators need to control the stability of these emulsions.

The stability analysis of these products with the Turbiscan Classic allows to study the effect of the amphotericin B (antibiotic) introduction to different injectable emulsions available on the market.

METHOD

Two series of samples were prepared with 4 injectable emulsions (at 10% in soya oil) from different suppliers (A, B, C, D):

- one with serum,
- one with amphotericin (1%)

Samples number	8
Analysed volume	6 ml
Temperature of analysis	20-22°C
Duration of analysis	14 hours

The obtained curve after one hour of analysis was selected as a reference. The represented spectrums show the evolution of back scattered light intensity (% , ordinate axis) on the tube height (mm, abscises axis) as a function of time (last curve in red).

RESULTS

The profiles obtained show different kinds of backscattering variations:

- A backscattering increase at the top of both samples, characteristic of a concentration increase of oil phase in this zone and so, corresponds to the formation of a cream layer (Figure 1 et 2).
- A backscattering decrease at the bottom of the samples, characteristic of a clarification of these products in this zone (Figure 1 et 2). This decrease is more important when the amphotericin is introduced in the emulsion. In fact, this corresponds to the formation of an absorbent product (of yellow colour): the precipitated antibiotic.