HPTLC Identification of Fatty Oils (Fixed Oils)

F-39




Scope:

This Application Note illustrates the United States Pharmacopeia's (USP) general chapter **<202> Identification of Fixed Oils by Thin-Layer Chromatography** which includes an HPTLC method for the identification of 14 different fatty oils. The method was optimized for reliable and reproducible visual identification and is based on pre-washed RP-18 HPTLC plates, development in an automatic developing chamber (ADC2) and detection by immersion in phosphomolybdic acid reagent.

Sample:

25 µL of fatty oil are dissolved in 3 mL of dichloromethane (methylene chloride). This is the sample solution.

System suitability test (SST):

Solution 1: Dissolve 25 µL of USP Corn Oil RS in 3 mL of dichloromethane.

Solution 2: Dissolve 25 µL of USP Olive Oil RS in 3 mL of dichloromethane.

Standards:

Dissolve 25 µL of the appropriate USP Fixed Oil RS in 3 mL of dichloromethane.

Derivatization reagent:

25 mg/mL of phosphomolybdic acid in 96% ethanol

Chromatographic conditions:

Stationary phase:	HPTLC plates RP-18 (Merck), 20x10 cm; Pre-develop the plate with dichloromethane to the upper edge. Dry the plate at 120°C for 10 minutes.
Mobile Phase:	Dichloromethane, glacial acetic acid, acetone (20:40:50)
Sample application:	2 µL of sample solution, SST solution and standard solution as 8 mm bands, min. 2 mm apart, 8 mm from lower edge of plate.

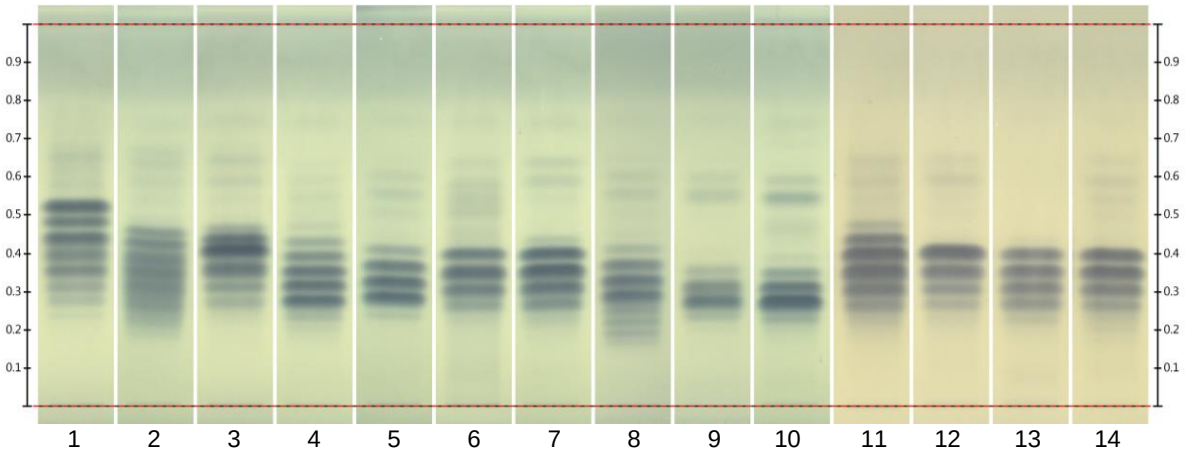
Development:	20x10 cm Twin Trough Chamber (ADC2), saturated for 20 min (filter paper), developing distance 80 mm from lower edge of plate. The plate is dried with cold air for 5 minutes. The plate is conditioned to a relative humidity of about 33%.
Derivatization:	The plate is immersed into the derivatization reagent for one second and heated for 3 minutes at 120°C.
Detection:	Examination in white light.

Acceptance criteria:

The Rf values of the principal bands of the sample solution correspond to those of the standard solution.

Results:

Compare to the chromatogram below:



1: USP Flax seed oil RS
2: USP Borage seed oil RS
3: USP Evening primrose oil RS
4: USP Canola oil RS
5: USP Almond oil RS
6: USP Cottonseed oil RS
7: USP Corn oil RS
8: USP Peanut oil RS
9: USP Palm oil RS
10: USP Olive oil RS
11: USP Soybean oil RS
12: USP Safflower oil RS
13: USP Sesame oil RS
14: USP Sunflower oil RS

References:

- Modified from <202> Identification of Fixed Oils by Thin-Layer Chromatography, *Pharmacopeial Forum* 39(3)