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INTRODUCTION

The important meaning of planar chromatography in modern analytical chemistry and main directions of its development were the basis to carry out the scientometric investigation. The main purpose of the given work was the estimate of the basic tendencies of development of planar chromatography in 1980-1990 and in 2000-2010 based on the articles published in the following journals: Journal of Planar Chromatography – Modern TLC, Chromatographia, Analytical Chemistry, Journal of Chromatography A, Journal of Analytical Chemistry, Russian Journal of Physical Chemistry A, Sorption and chromatographic processes (Russia), as well as the abstracts of the articles published in Camag Bibliography service. When conducting the given research, the methods and approaches described earlier were used [1-5].

EXPERIMENTAL

At the Fig. there are data on changing the most widely used methods of planar chromatography. The data obtained allow concluding that the most often nowadays analysts carry out separation in the mode of traditional linear one-dimensional TLC, the second place on the rate of using is taken by two-dimensional TLC both in the '80s and 2000-2010.

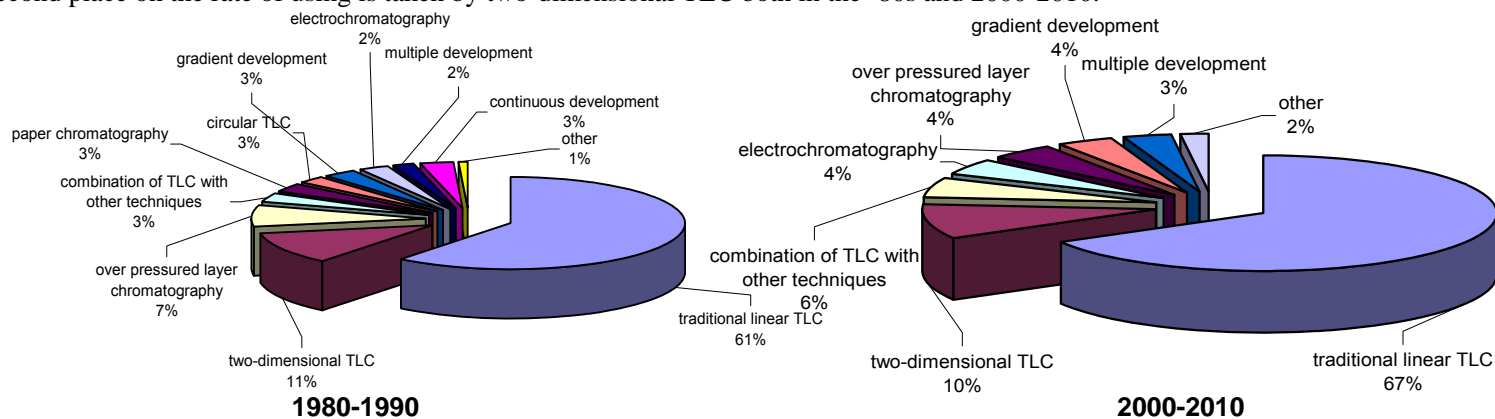


Fig. The dynamics of the change of the role of the main planar chromatography methods

It is important to note that the most often separation by the TLC method is still carried out at the vertical plate position (92%), although the chambers for separation implementing with horizontally positioned plate are commercially available.

Despite the wide variety of stationary phases available for using, the most often in 2000-2010 the plates with the layer silica gel (54%) were used, while in the '80s unmodified silica gel was used in 35% of publications, the plates with the layer - reversed phase silica gel – were used in 2000-2010 in 18% of works, in 1980-1990 – only in 13% of works published. The plates with the layer - aluminum oxide – were used only in 2% of the publications, however, in the '80s such plates were used in 16% of the publications. As well, in the course of time, the sorbent layer thickness has changed for 2000-2010, in most of cases it made up 0.2 mm (41%), and in the '80s it was 0.25 mm (49%).

The TLC method having been developed and its practical application having been widened, the component composition of the used mobile phases has changed, as well. Thus if in the '80s two-component phases (42%) were the most widespread and 5-component mobile phases were not absolutely used, in 2000-2010 3-component mobile phases (39%) were used the most often, as well, 5-component mobile phases were brought into use (in 2% of the publications). As the most widespread 10 components of mobile phases were used in the '80s: water (25%), methanol (24%), chloroform (22%), acetone (21%), glacial acetic acid (18%), ethyl acetate (13%), benzene (12%), 25% ammonia solution (8%), *n*-butanol (7%), formic acid (6%). In the period of 2000-2010 the situation was slightly different - water (33%), ethyl acetate (32%), methanol (27%), chloroform (25%), glacial acetic acid (18%), toluene (17%), formic acid (14%), acetone (12%), *n*-hexane (10%), 25% ammonia solution (7%). Basing on the obtained data it can be concluded that recently the chromatographers have substantially restricted the using of toxic mobile phases to compare to the period 1980-1990.

Thin-layer chromatography is used for the analysis of different compounds and year by year this list is widened. In the Table the data on what types of the compounds are subjected to analysis by means of TLC the most often.

Table. The spheres of primary practical application of TLC.

Names of compounds (research tasks)	The part of publications devoted to the given subject area	
	1980-1990	2000-2010
Pharmaceuticals investigations	12 %	30 %
Drug analysis	50 %	10 %
Vitamins	1 %	6 %
Organic acids and lipids	4 %	6 %
Alkaloids	3 %	5 %
Terpenes and other volatile plant ingredients	-	5 %
Substances containing heterocyclic oxygen	1 %	4 %
Amino acids and peptides	8 %	3 %

CONCLUSIONS

Using the scientometric method the tendencies of TLC method development have been studied.

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