

## Integrated BioSeparation Solutions

### Company Profile

We are the company with a focus on outsourcing HPLC method development for pharmaceutical, biotechnology and food businesses.

Our main customers are pharmaceutical mid-size CDMO & CRO enterprises that develop and manufacture a wide range of APIs and FDFs, as well as carry out drug discovery research.

HPLC solutions we provide are exceptionally cost-effective and robust, and we deliver them in a short time. It is achieved through implementation of state-of-the-art method development protocols and wide exploiting of highly specific LC modes we are very strong at.

We also help customers to improve analytical skills of R&D specialists by teaching them to use our original approaches in their practice. Our HPLC method development course is the one-of-a-kind in the market for it provides an attendee with all necessary tools to develop really outstanding, truly modern HPLC methods.

Our big passion is helping QC chemists to overcome their fear and move forward to become R&D specialists. For that purpose we develop and encourage the original project of ready-to-use HPLC applications that can be downloaded online from our website. Such a ready-to-use application can serve as a starting point for developing the complete HPLC method.

At the same time, this project allows us to test cutting-edge HPLC separation technologies and HPLC columns available on the market, and thus to provide our customers with the most effective solutions. ■



Dr.  
Konstantin  
SYCHEV

Founder  
& CEO

He started his career as HPLC specialist in 1998, but a scientific career started in 2001 in the laboratory of V.A. Davankov. The work has been carried out in such areas as the development of novel stationary phases, elucidation of retention mechanisms, development of analytical and preparative methods with the use of HPLC & SPE.

In 2008 he started to develop commercial HPLC methods, and as the visiting lecturer and the author of the original HPLC courses. In 2018 the company Integrated BioSeparation Solutions was established.

Konstantin is the author of more than 50 articles and 4 books on HPLC and sample preparation. More than 500 participants from 56 companies have attended his author's HPLC courses.



Dr.  
Vadim  
DAVANKOV

Scientific Advisor  
Chiral HPLC Inventor

Vadim Davankov is the inventor of Chiral HPLC (1964), Nobel Prize nominee and the recipient of numerous international awards on HPLC and Chirality:

- Chirality Gold Medal (1999),
- Martin Gold Medal (2005),
- Molecular Chirality International Award (2010),
- Tswett & Nernst Separation Science EU Award (2010).



Dr.  
Evgenia  
OKUNSKAYA

Co-Founder  
& KAM

Evgenia has worked in different Israeli life science companies and start-ups as an analytical R&D laboratory head. In I.B.S. she is responsible for cultivating a good working relationship with key customers.

We believe that truly modern HPLC methods should meet a number of stringent requirements and possess a number of characteristic features, which set them apart from outdated, cost-prohibitive, and non-robust ones.

Among such distinguishing features the following ones should be mentioned:

- focus on method's specificity;
- high plate count & peak symmetry;
- isocratic mode for routine methods;
- no mobile phase additives;
- minimum sample preparation.

Specific HILIC & IC separations that require minimum sample preparation should be the norm for pharmaceutical and food analysis. In turn, mixed-mode separations (RP/HILIC, RP/CT, RP/IC) should become the norm for RP chromatography.

The modern stationary phase should be as chemically inert as possible providing high peak symmetry for basic drugs and various chelating compounds. For 400-600 bar HPLC systems, the plate count should be preferably within the range 5'000-25'000 in case of IC separations, 8'000-40'000 in case of RP and HILIC separations, and 15'000-80'000 in case of NP separations.

An example of highly specific and efficient HILIC HPLC application for pharmaceutical analysis with the use of fully porous packing is shown in Figure 1. Six antihistamines are separated from each other and from matrix compounds just in six minutes using a standard 400 bar HPLC system with a standard UV detector.

Similarly, an example of highly specific and efficient mixed IC/RP HPLC application for food & beverage analysis with the use of core-shell packing is shown in Figure 2. Caffeine, riboflavin, and pyridoxine are separated from each other and from abundant matrix compounds in six minutes using 400 bar HPLC/UV system. ■

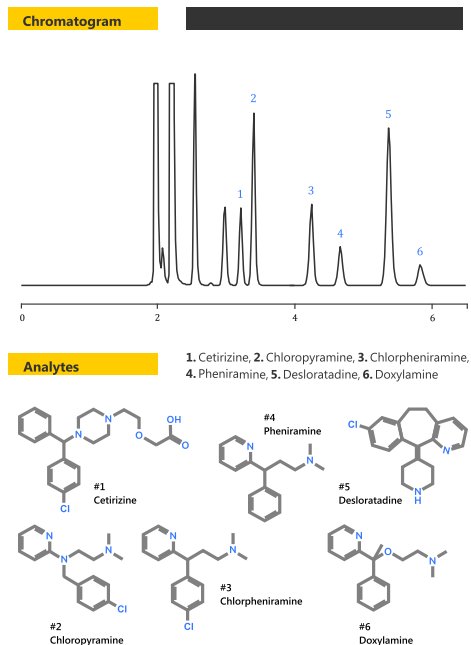
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**Figure 1.** Specific determination of six antihistamines (HILIC mode). Sample: the mixture of six medications; each of them contains one of the analytes.

*Cetirizine:* N=24'000, Af=1.0;

*Chloropyramine:* N=31'800, Af=1.0;

*Desloratadine:* N=30'000, Af=1.1.



**Figure 2.** Specific determination of caffeine, riboflavin & pyridoxine (IC/RP mode). Sample: beverage concentrate.

*Caffeine:* N=20'000, Af=1.3;

*Riboflavin:* N=15'000, Af=1.1;

*Pyridoxine:* N=24'500, Af=1.2.

