Improved separation of catecholamines using YMC-Triart PFP as an orthogonal column

The separation of very similar substances such as catecholamines is challenging. For these aromatic compounds a stationary phase with different selectivity than conventional C18 RP phases can be a valuable approach. A phase with a pentafluorophenyl modification is a suitable candidate with its enhanced π-π interactions, in addition to dipole-dipole-, hydrophobic-, and hydrogen bonding interactions.

In this application note, 14 catecholamines are analysed using a simple RP gradient with a YMC-Triart PFP column and compared to the separation using a C18 modification. The use of the orthogonal YMC-Triart PFP displays not only a different elution order, but also separates two compounds that cannot be resolved on the C18 columns. In comparison to the C18 column, basic compounds show higher retention while acidic compounds show a slightly reduced retention, which results in a separation of compounds 3 and 6 as well as 9 and 12 that is not possible using the C18 phase. This ensures a simultaneous analysis of the 14 structurally similar catecholamines.

A pentafluorophenyl column such as YMC-Triart PFP is an ideal choice as an orthogonal column to a C18 one such as YMC-Triart C18.

It shows a completely different separation pattern and might resolve compounds which cannot be separated or displays additional substances that haven't been seen on a C18 phase.

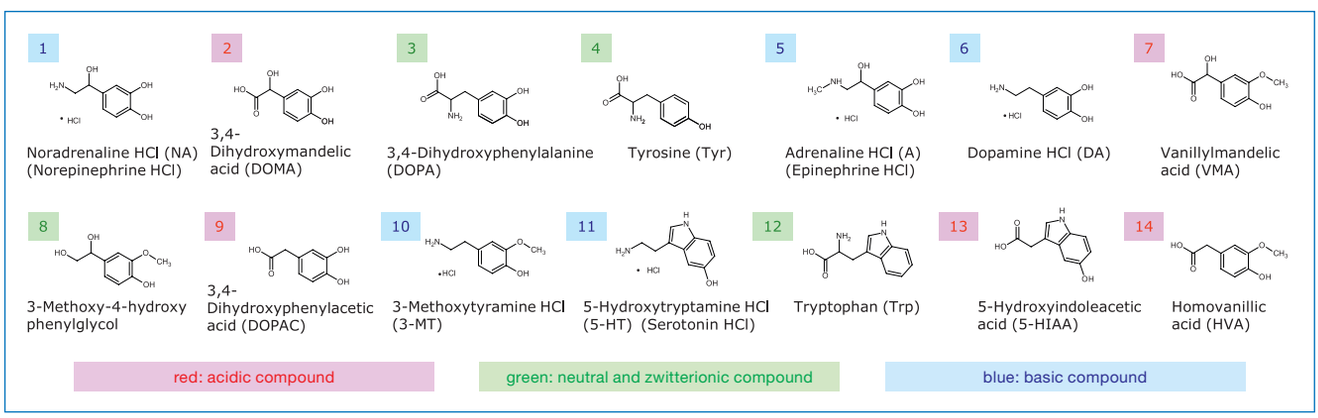

Figure 1: 14 structurally similar catecholamines.

Chromatographic conditions

Column:	YMC-Triart C18 (5 µm, 12 nm), 150 x 3 mm ID
	YMC-Triart PFP (5 µm, 12 nm), 150 x 3 mm ID
Part no.:	TA12S05-1503PTH
	TPF12S05-1503PTH
Eluents:	A) 10 mM formic acid in water
	B) 10 mM formic acid in methanol
Gradient:	0–20 % B (0–30 min), 20 % B (30–35 min)
Flow rate:	0.425 mL/min
Temperature:	25 °C
Detection:	UV at 280 nm

YMC Europe GmbH · Schöttmannshof 19 · 46539 Dinslaken · Phone +49 (0)2064 427-0 · Fax +49 (0) 2064 427-222 · Email: info@ymc.de · www.ymc.de

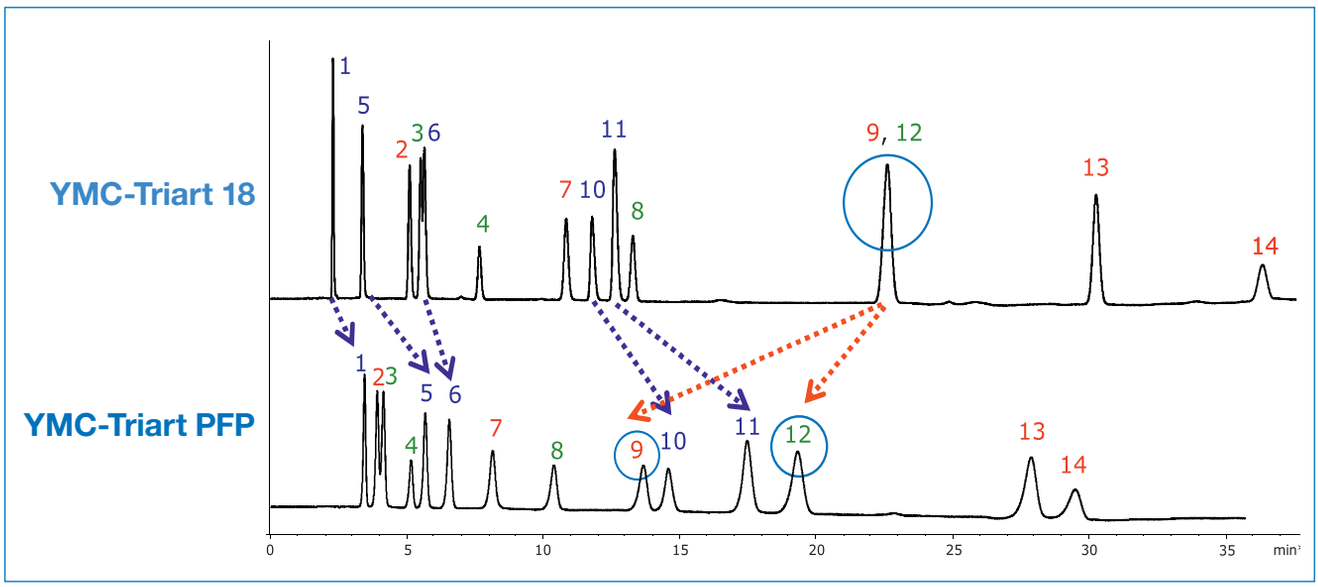

Figure 2: Separation of catecholamines using YMC-Triart C18 (top) compared to YMC-Triart PFP (bottom).