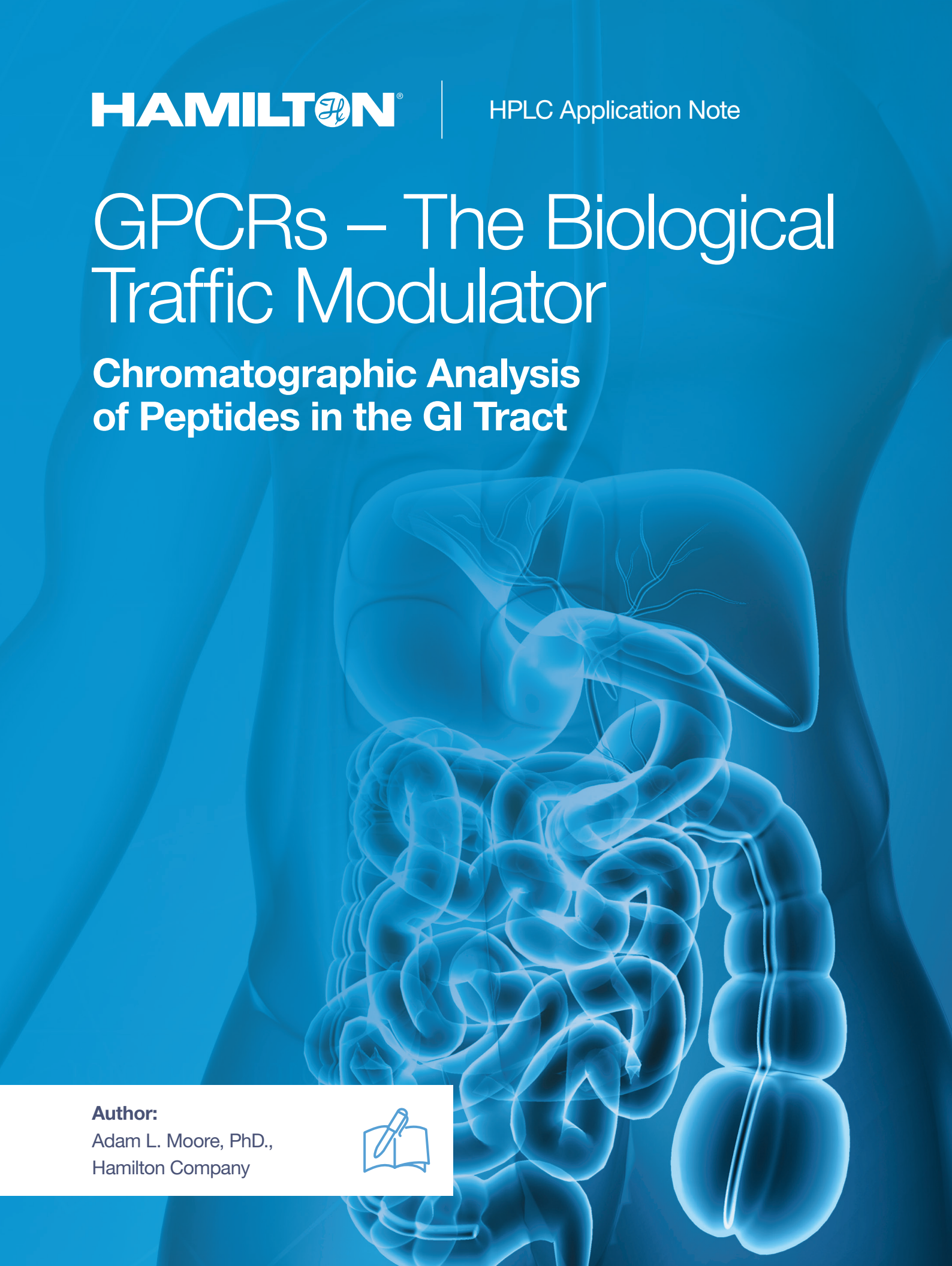
HAMILTON®

HPLC Application Note

GPCRs – The Biological Traffic Modulator

Chromatographic Analysis of Peptides in the GI Tract



Author:
Adam L. Moore, PhD.,
Hamilton Company

Application

The analysis of mechanistic pathway markers and degradation products has led science to incredible discoveries and novel therapeutic treatments. Analysis of peptides in the gastrointestinal (GI) tract has led to discoveries that relates these peptides to other functional systems like the endocrine, cardiac, and central nervous systems. Linking these peptides is a crucial part to understanding how the body works as an equilibrium. A key aspect in linking peptide relationships is found in the purification and identification of peptides in various systems.

The G protein-coupled receptor (GPCR) has shown significance in the development in new therapeutic treatments. While each of the analytes shown have different modes of action, each also interacts with the GI track and bind to GPCRs. The GI tract has recently been implicated in the generation of diseases stemming from a dysfunction amongst metabolic peptides. Isolation of these peptides may signal possible metabolic changes that take place if the cascade is not functioning properly. Some chronic diseases that are facilitated via dysfunction in the pathway include endocrine disorders such as thyroid disease or diabetes, cell proliferation, and kidney disease. High Performance Liquid Chromatography (HPLC) stationary phases offered by Hamilton Company are invaluable in the isolation of GPCR binding peptides.

The analysis of the seven peptides highlights the benefits of using the polymer-based PRP-3, a reversed-phase resin. The time to perform the analysis was shortened dramatically due the use of elevated flow rates, allowing for quicker re-equilibration and sharper analyte peaks. Similarly, the covalent bonds found in the PRP-3 exhibit advantageous interactions between the biological π bonds found in the peptides and the available aromatic benzyl rings of the resin. The highly hydrophobic resin made of crosslinked divinylbenzene rings is nearly impervious to either overtly alkaline or acidic mobile phases allowing for great reproducibility between batches and multiple runs.

Want more information about this and other applications?
Contact Hamilton today!

Column Information

Packing Material	PRP-3, 7 µm
Dimensions	150 x 4.6 mm
P/N	79466

Chromatographic Conditions

Gradient	0.0–10.00 min. 15–30 %B
Temperature	Ambient
Injection Volume	5 µL
Detection	UV at 215 nm
Eluent A	H_2O + 0.04% HFBA
Eluent B	CH_3CN + 0.03% HFBA
Flow Rate	2.0 mL/min

Compounds:

1: Met-enkephalin

2: Leu-enkephalin

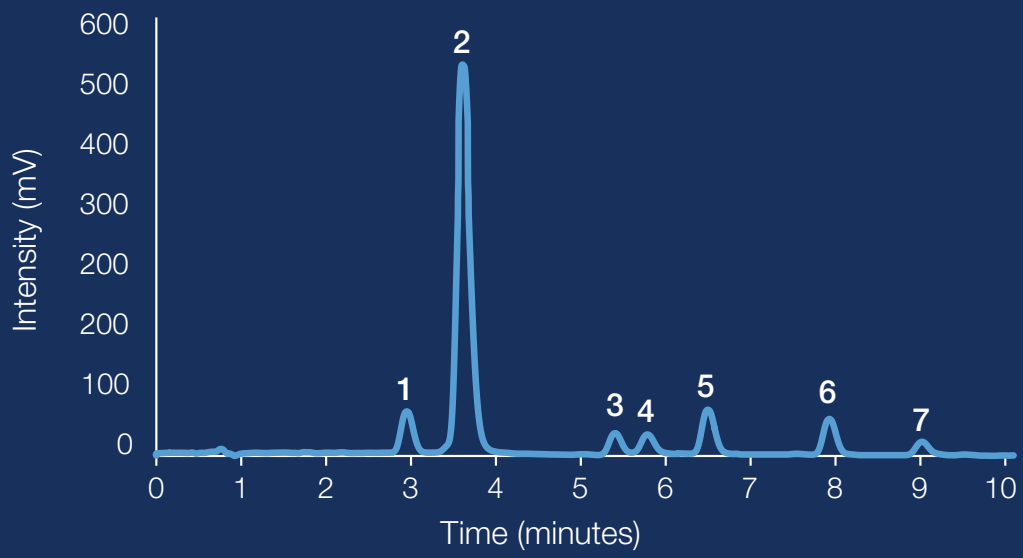
3: Neurotensin

4: Bombesin

5: Angiotensin II

6: Somatostatin

7: Insulin



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About Hamilton

Hamilton Company is a global manufacturer and supplier of world-class analytical components, medical instrumentation, temperature control systems, laboratory robotics and automated liquid handling equipment. For more than 35 years, Hamilton Company has developed and manufactured pressure-stable, polymeric polystyrene-divinylbenzene (PS-DVB) HPLC columns that are used in most of the world's top chromatography labs. With a wide range of particle sizes, pore sizes, pH stability from 1 to 14, temperature resistance over 100°C, and chemistries to match most analyte types, Hamilton polymeric columns are the chromatographer's choice for challenging separations.

Hamilton's Here to Support You

Product Support

We are available to assist your lab with method development, optimization, troubleshooting, and product recommendations.

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Get assistance with order status, lead times, and shipping information.

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HAMILTON®

Web: www.hamiltoncompany.com
USA: 800-648-5950
Europe: +40-356-635-055

Hamilton Americas & Pacific Rim
Hamilton Company Inc.
4970 Energy Way
Reno, Nevada 89502 USA
Tel: +1-775-858-3000
Fax: +1-775-856-7259
sales@hamiltoncompany.com

Hamilton Europe, Asia & Africa
Hamilton Central Europe S.R.L.
str. Hamilton no. 2-4
307210 Giarmata, Romania
Tel: +40-356-635-055
contact.lab.ro@hamilton-ce.com

To find a representative in your area, please visit hamiltoncompany.com/contacts.

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