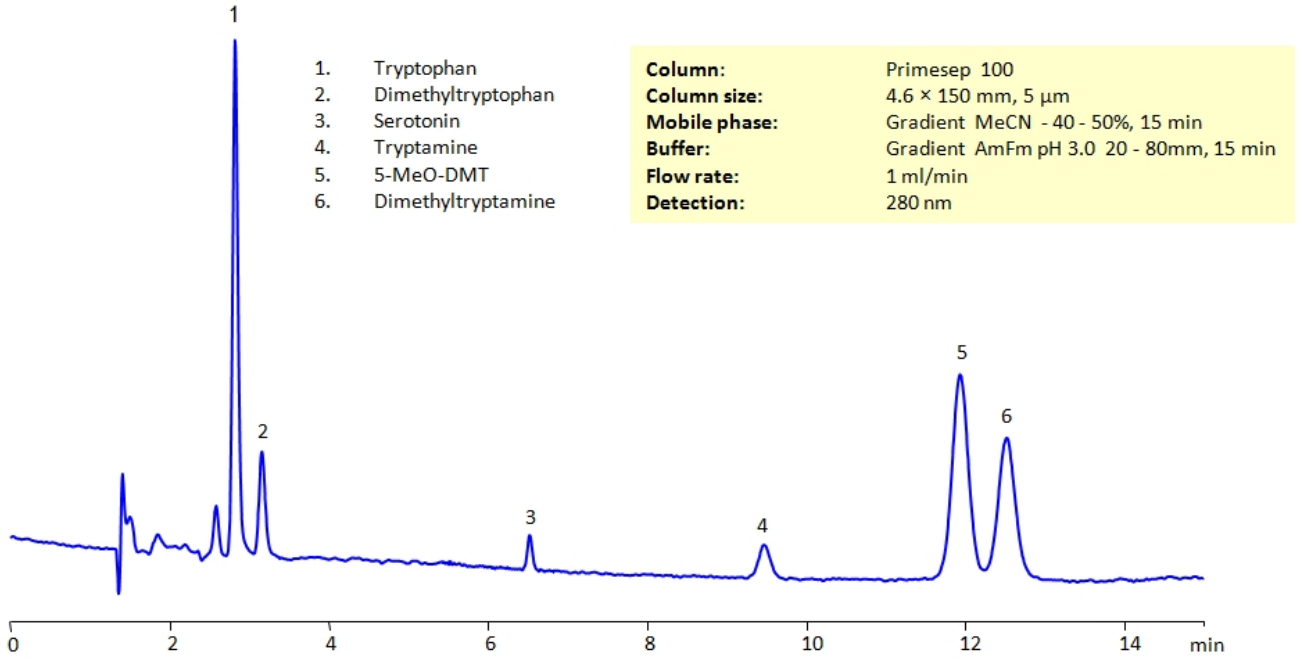
HPLC Separation of Biogenic Amines on Primesep 100 Column

https://sielc.com/hplc-separation-of-biogenic-amines-on-primesep-100-column

Chromatogram



Description

High Performance Liquid Chromatography (HPLC) Method for Analysis of Tryptophan , Serotonin , N,N-Dimethyltryptamine , Tryptamine , N,N-Dimethyl-5-methoxytryptamine , N,N-dimethyltryptophan .

Tryptophan is an essential amino acid used in the synthesis of proteins. It cannot be produced by the body and therefore must be consumed through a diet of meats, eggs, dairy, seeds, and nuts. The proteins that it helps synthesize are important for muscle growth and repair. Tryptophan is also converted into serotonin, which is responsible for mood, appetite, and pain reception. It is further down converted into melatonin. Tryptophan is also used in treatments for severe PMS symptoms, depression, and insomnia. It is naturally found in red meat, poultry eggs, and dairy. It’s chemical formula is C 11 H 12 N 2 O 2 . You can find detailed UV spectra of Tryptophan and information about its various lambda maxima by visiting the following link.

Tryptamine is an indolamine derived from tryptophan with the chemical formula C 10 H 12 N 2 . It is naturally found in plants, fungi, and animals. It helps with regulating the activity of dopaminergic, serotonergic, and glutamatergic systems. You can find detailed UV spectra of Tryptamine and information about its various lambda maxima by visiting the following link.

Serotonin is a neurotransmitter derived from tryptophan with the chemical formula C■■H■■N■O . Serotonin is a chemical messenger that is crucial for bodily functions. It helps regulate mood and reduce anxiety, digestion, blood clotting, and contributes to the sleep-wake cycle. Low serotonin levels are often associated with a variety of mental illnesses including but not limited to Obsessive Compulsive Disorder (OCD), Post-Traumatic Stress Disorder (PTSD), Depression, and Anxiety.

Dimethyltryptamine is a psychedelic substance derived from tryptamine with the chemical formula C 12 H 16 N 2 . It works as an agonist for Serotonin. It is not approved for medical use. Due to it’s high risk of abuse, it is a Schedule I drug in the United States.

5-MeO-DMT , also known as 5-methoxy-N,N-dimethyltryptamine), O-methylbufotenin, and mebufotenin, is a psychedelic substances derived from tryptamine found in plants and toad secretions. Between 1970s to 1990s, a certain religious sect

believed the use of mebufotenin to be sacred to their religious practice. It is currently considered a Schedule I controlled substance in the United States, however.

All the compounds have similar structures and can present difficulties to separation in reverse-phase HPLC. They can be separated using the Primesep 100 mixed-mode column in gradient analysis with acetonitrile (ACN) and water mobile phase with ammonium formate (AmFm) buffer, making the method MS-compatible. The amines can also be UV detected at 280nm.

Method Parameters

Mobile Phase	Gradient MeCN – 40-50%, 15 min
Buffer	Gradient AmFm pH 3.0- 20-80 mM, 15 min
Flow Rate	1.0 ml/min
Detection	UV 280 nm, MS-compatible mobile phase
Class of Compounds	Drug, Hydrophilic, Supplements, Monoamine, Neurotransmitter
Analyzing Compounds	Tryptophan,Serotonin,N,N-Dimethyltryptamine,Tryptamine,N,N-Dimethyl-5-methoxytryptamin

HPLC Column Used

Primesep 100, 4.6 x 150 mm, 5 µm, 100 A, dual ended

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