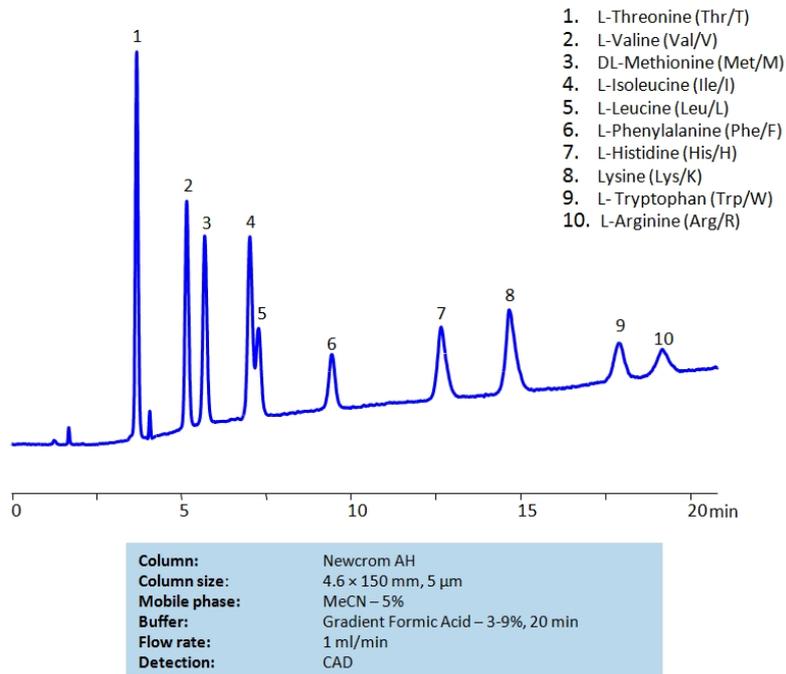


HPLC Separation of Mixture of Nine Essential Amino acids and Arginine on Newcrom AH Column



High Performance Liquid Chromatography (HPLC) Method for Analysis of L-Threonine , Valine , Methionine , Isoleucine , Leucine , Phenylalanine , Histidine , Tryptophan , Lysine , Arginine .

Essential amino acids cannot be made by the body. As a result, they must come from food. The 9 essential amino acids are: histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine.

L-Threonine is an essential amino acid with the chemical formula $C_4H_9NO_3$. It cannot be produced within the body and must be obtained through consuming it. It's found in many protein-rich foods, including but not limited to eggs, meat, dairy, legumes, and seeds. It is necessary in the body as a building block of protein like collagen and elastin. The two proteins are crucial for skin, hair, and connective tissue.

L-Valine is an essential amino acid with the chemical formula $C_5H_{11}NO_2$. It cannot be produced within the body and must be obtained through consuming it. It's found in foods including but not limited to nuts, legumes, whole grains, and seeds. It is especially beneficial for athletes. It is important for muscle repair, growth, and energy regulation.

DL-Methionine is an essential amino acid with the chemical formula $C_5H_{11}NO_2S$. It cannot be produced within the body and must be obtained through consuming it. It is required for protein synthesis. It also helps build and repair tissue including, but not limited to, skin, hair, muscles, and nails. In a veterinary context, DL-Methionine is used to address bladder issues in dogs.

L-Isoleucine is an essential amino acid with the chemical formula $C_6H_{13}NO_2$. It cannot be produced within the body and must be obtained through consuming it. It is a building block of protein that are

essential for muscle growth, repair, and other bodily functions. It also helps regulate blood sugar levels and supports the immune system. It is found in foods like meat, fish, eggs, dairy, beans, lentils, nuts, and seeds.

L-Leucine is an essential amino acid with the chemical formula $C_6H_{13}NO_2$. It cannot be produced within the body and must be obtained through consuming it. It stimulates production of protein that are essential for muscle building and repair. Meats are the easiest way to get L-Leucine in significant amounts.

L-Phenylalanine is an essential amino acid with the chemical formula $C_6H_9NO_2$. It cannot be produced within the body and must be obtained through consuming it. It is typically found in high protein foods such as meat, eggs, and fish. Outside of being important for creation of protein, it is also used in treatment for skin disorders and depression.

L-Histidine is an essential amino acid with the chemical formula $C_9H_{11}N_3O_2$. It cannot be produced within the body and must be obtained through consuming it. It is fundamental for repair of damaged tissue, growth of muscles, and making of blood cells. Outside of protein, it also has the unique property of being able to act as a buffer to help maintain stable pH levels in the body. Sources of it include meat, fish, dairy products, beans, and nuts.

L-Tryptophan is an essential amino acid with the chemical formula $C_{11}H_{12}N_2O_2$. It cannot be produced within the body and must be obtained through consuming it. Like the other essential proteins, it is a building block for protein and muscle tissue, but it is also converted in the body into serotonin, which affects mood. L-Tryptophan is also used in treatments for severe PMS symptoms, depression, and insomnia. It is naturally found in red meat, poultry eggs, and dairy.

Lysine is an essential amino acid used in the synthesis of proteins. In biological conditions, it is a basic, charged molecule.

L-Arginine is an essential amino acid used in the synthesis of proteins.

L-Threonine, Valine, Methionine, Isoleucine, Leucine, Phenylalanine, Histidine, Tryptophan, Lysine, Arginine can be retained and analyzed using the Newcrom AH stationary phase column. The analysis utilizes a gradient method with a simple mobile phase consisting of water and acetonitrile (MeCN) with a Formic Acid buffer. Detection is performed using CAD.

Method Parameters

Column	Newcrom AH, 4.6 x 150 mm, 5 μ m, 100 Å, dual ended
Mobile Phase	MeCN – 5%
Buffer	Gradient Formic Acid – 3-9%, 20 min
Flow Rate	1.0 mL/min
Detection	CAD

Quelle: <https://sielc.com/hplc-separation-of-mixture-of-essential-amino-acids-on-newcrom-ah-column>