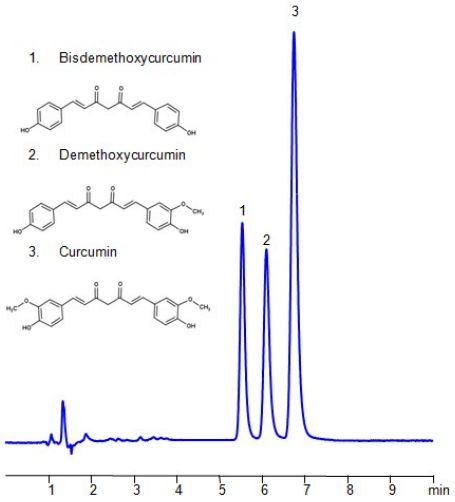
HPLC Method for Analysis of Curcuminoids in Turmeric Capsules on Newcrom R1 Column



Column:	Newcrom R1
Column size:	4.6 × 150 mm, 5 µm
Column part number:	NR1 - 46.150.0510
Mobile phase:	MeCN/H_2O - 50/50%
Buffer:	H_2SO_4 – 0.1 %
Flow rate:	1.0 mL/min
Detection:	Vis 425 nm

Separation type: Liquid Chromatography Reversed-phase

Turmeric is a yellow spice derived from the rhizomes of the plant Curcuma longa. It has been used for centuries in culinary and medicinal traditions, especially in Indian and Southeast Asian cultures. One of the main bioactive components responsible for many of turmeric's potential health benefits is curcumin.

The curcumin content in turmeric varies depending on the source and preparation, but typically, dried turmeric powder contains about 2-5% curcumin by weight. This relatively low percentage is one reason why many curcumin supplements are made using extracts to provide a concentrated dose.

Curcumin is not a single compound but is rather a mixture of related compounds known as curcuminoids.

Curcuminoids are a group of polyphenolic compounds found in turmeric (Curcuma longa). They are responsible for the yellow color of the turmeric spice and are also the main bioactive components believed to be responsible for many of the potential health benefits of turmeric.

The three primary curcuminoids in turmeric are:

Curcumin (diferuloylmethane): This is the primary and most studied component, accounting for 60-70% of the curcuminoids in turmeric. Demethoxycurcumin: This compound constitutes about 20-27% of the curcuminoids. Bisdemethoxycurcumin: This makes up around 10-15% of the curcuminoids. These compounds have been studied for their potential anti-inflammatory, antioxidant, anticancer, and neuroprotective properties, among others. Due to their low bioavailability, many formulations, such as those combined with piperine (from black pepper), have been developed to enhance absorption in the body.

Curcuminoids can be retained, separated, and analyzed on a mixed-mode Newcrom R1 column with a mobile phase consisting of water, Acetonitrile (MeCN), and sulfuric acid. This analytical method can be detected with high resolution and peak symmetry at a wavelength of 425 nm using Vis detection

Method Parameters

Column	Newcrom R1, 0.5 x 150 mm, 5 µm, 100 Å, dual ended
Mobile Phase	MeCN/H2O – 50/50%,
Buffer	H2SO4 – 0.2%
Flow Rate	1.0 mL/min
Detection	Vis 425 nm

Quelle: https://sielc.com/hplc-determination-of-curcuminoids