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Turmeric is a staple in nutraceutical and spice markets around the world. It is so thoroughly ingrained in the culture of south-east Asia that the word for Turmeric in Bengali is synonymous with the word for “yellow”. Unfortunately, that yellow color may be costing consumers their health.

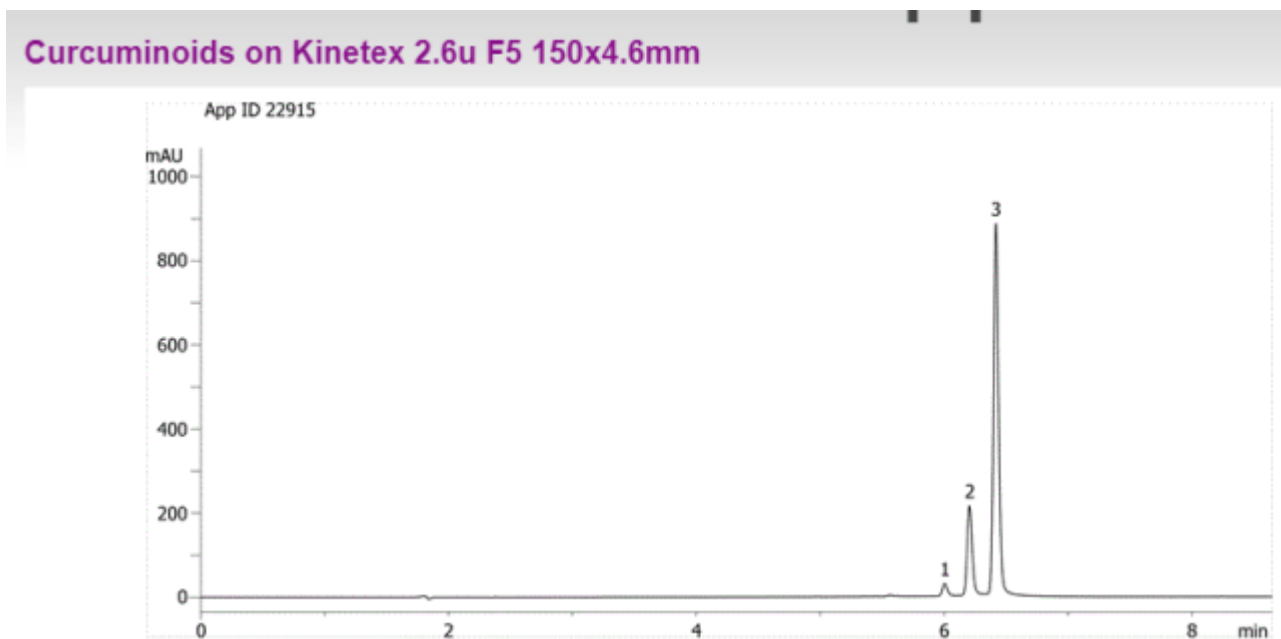
In a study conducted by the Stanford Woods Institute for the Environment, researchers investigated previous studies that implied that Bangladeshi Turmeric producers may be adding lead chromate to their product. This investigation entailed interviews of 152 individuals within the industry, and over 500 samples of turmeric, pigments, dust and soil gathered from identified the producing districts of Bangladesh.

What they found was shocking. Out of the 43 processing plants that researchers had taken samples from, physical evidence of adulteration was found in 23 of them, with the median concentration of lead by weight being 0.02%. The reason the processors had taken to using the neurotoxic lead chromate is simple, it is cost effective and it dyes the turmeric a more attractive shade of bright yellow, which is particularly important for producers when adverse growing conditions result in yields of dull turmeric.

As the study points out, however, there is hope. Inspection of the spice is focused on the addition of rice powder, and education on the dangers of the lead-chromate containing

yellow pigments is low. With more awareness, consumer preference for bright yellow adulterated turmeric may shift, and investigators may focus their efforts on eliminating lead from these processing facilities.

To test turmeric through chromatography we first must understand the natural yellow pigments that occur within the spice. To analyze the curcuminoids that both give turmeric its color and provide its anti-inflammatory and anti-oxidant properties, we recommend the use of a LC/UV analysis, as shown in the following Phenomenex application.



Application Detail (App ID: 22915)

Column: **Kinetex® F5 2.6µm 100 Å, LC Column 150 x 4.6 mm, Ea**

Part No: **00F-4723-E0**

Dimensions: 150 x 4.6 mm ID

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Products for this Application

Elution Type: Gradient

Elution A: 0.1% Formic Acid in Water

Elution B: Acetonitrile

Gradient Profile:	Step No.	Time (min)	Pct A	Pct B
	1	0	45	55
	2	8	30	70
	3	9	0	100
	4	10	0	100
	5	11	45	55
	6	13	45	55

Flow Rate: 1 mL/min

Col. Temp: ambient

Detection: UV-Vis Abs.-Variable Wave.(UV) @ 425 nm (22°C)

To analyze different chromates that may be present in your samples, we recommend reviewing the following study on chromate analysis from wastewater:

<https://www.sciencedirect.com/science/article/pii/S0013935119305195?via%3Dihub>

If you have any questions, please comment below or reach out to our Technical Experts 24/7 around the world at [www.phenomenex.com/chat](http://www.phenomenex.com/chat).

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