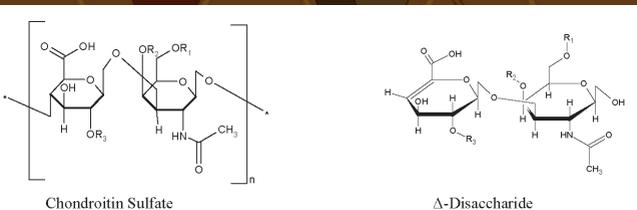


ChromaDex™ has created a chondroitin sulfate enzymatic digest HPLC analysis kit based on the validated method published in JAOAC to solve these problems. Enzymatic hydrolysis of chondroitin sulfate followed by analysis by HPLC has proven to be a much more effective and specific method for analysis of chondroitin sulfate raw materials and dietary supplement products.



Name	Abbreviation	R	R <sub>2</sub>	R <sub>3</sub>
2-acetamido-2-deoxy-3-O-(β-D-glucopyranosyluronic acid)-D-galactose	ADI-0S	H	H	H
2-acetamido-2-deoxy-3-O-(β-D-glucopyranosyluronic acid)-4-O-sulfo-D-galactose	ADI-4S	H	SO <sub>3</sub> <sup>-</sup>	H
2-acetamido-2-deoxy-3-O-(β-D-glucopyranosyluronic acid)-6-O-sulfo-D-galactose	ADI-6S	SO <sub>3</sub> <sup>-</sup>	H	H
2-acetamido-2-deoxy-3-O-(2-O-sulfo-β-D-glucopyranosyluronic acid)-6-O-sulfo-D-galactose	ADI-di(2,6)S	SO <sub>3</sub> <sup>-</sup>	H	SO <sub>3</sub> <sup>-</sup>
2-acetamido-2-deoxy-3-O-(β-D-glucopyranosyluronic acid)-4,6-di-O-sulfo-D-galactose	ADI-di(4,6)S	SO <sub>3</sub> <sup>-</sup>	SO <sub>3</sub> <sup>-</sup>	H
2-acetamido-2-deoxy-3-O-(2-O-sulfo-β-D-glucopyranosyluronic acid)-4,6-di-O-sulfo-D-galactose	ADI-tri(2,4,6)S	SO <sub>3</sub> <sup>-</sup>	SO <sub>3</sub> <sup>-</sup>	SO <sub>3</sub> <sup>-</sup>

Figure 1. Structures of Chondroitin Sulfate and unsaturated disaccharides resulting from enzyme hydrolysis by chondroitinase AC II enzyme.



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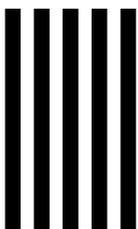
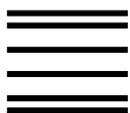
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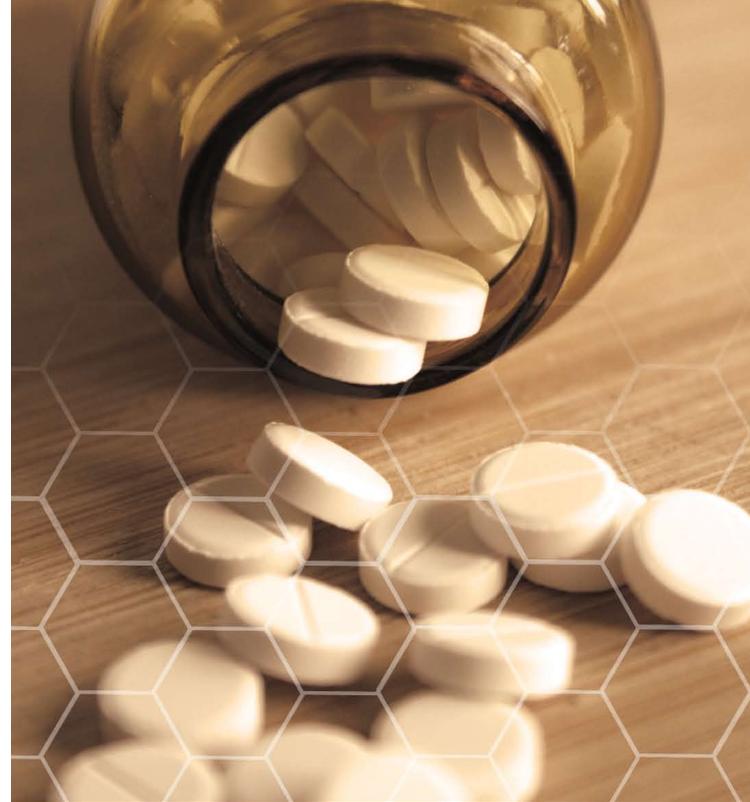
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# Chondroitin Sulfate

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# Chondroitin Sulfate AOAC HPLC Analysis Kit

AOAC validated method

Easy-to-use kit

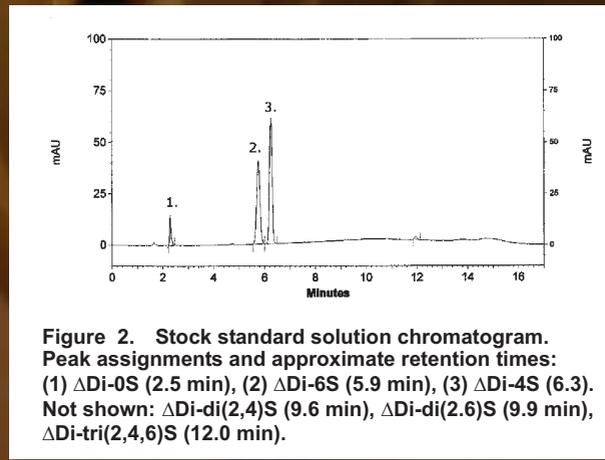
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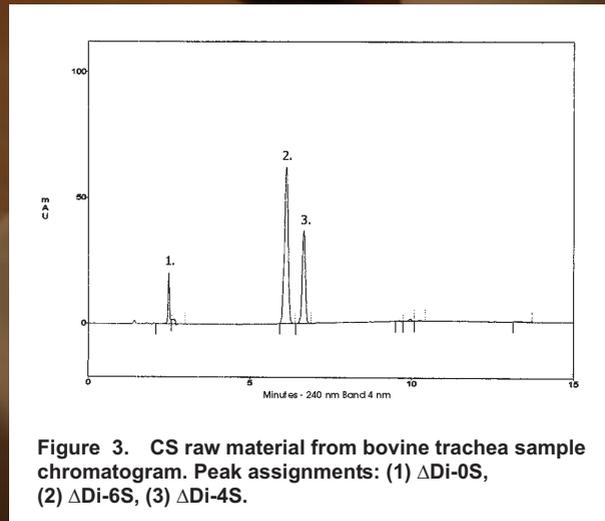
Chondroitin Sulfate is a polymeric glycosaminoglycan consisting of alternating glycuronic acid and N-acetylhexosamine residues. It is closely related to other glycosaminoglycans such as hyaluronic acid, heparin, dermatan sulfate and keratin sulfate.

Quantitative and qualitative analysis of chondroitin sulfate in dietary supplements can be very challenging, because of the complex nature of chondroitin sulfate. There are many methods used in the industry that cannot distinguish between chondroitin sulfate and other potential adulterants.

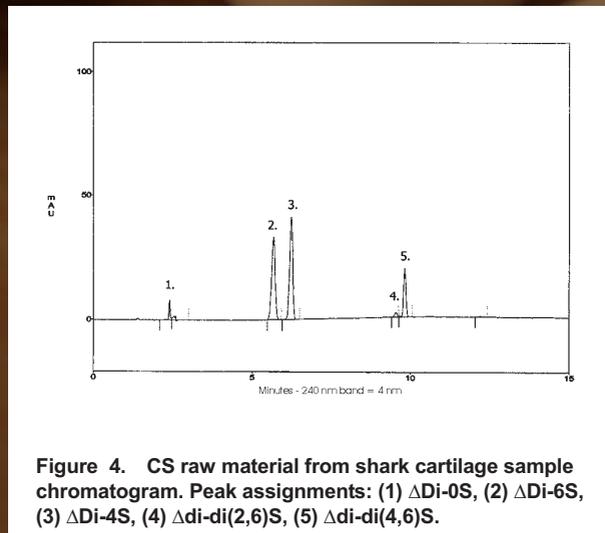
The CPC titration method has become a common method of analysis for chondroitin sulfate, however, this method can give positive results for not only other glycosaminoglycans, but also other adulterants such as carrageenan, proteins and surfactants.



**Figure 2. Stock standard solution chromatogram. Peak assignments and approximate retention times: (1)  $\Delta$ Di-0S (2.5 min), (2)  $\Delta$ Di-6S (5.9 min), (3)  $\Delta$ Di-4S (6.3). Not shown:  $\Delta$ Di-di(2,4)S (9.6 min),  $\Delta$ Di-di(2.6)S (9.9 min),  $\Delta$ Di-tri(2,4,6)S (12.0 min).**



**Figure 3. CS raw material from bovine trachea sample chromatogram. Peak assignments: (1)  $\Delta$ Di-0S, (2)  $\Delta$ Di-6S, (3)  $\Delta$ Di-4S.**



**Figure 4. CS raw material from shark cartilage sample chromatogram. Peak assignments: (1)  $\Delta$ Di-0S, (2)  $\Delta$ Di-6S, (3)  $\Delta$ Di-4S, (4)  $\Delta$ di-di(2,6)S, (5)  $\Delta$ di-di(4,6)S.**

## Ordering Information

Product ID	Product Name	Qty/Unit	Price*
<b>CHONDROITIN DISACCHARIDES</b>			
ASB-00003614-001	Chondroitin Disaccharide Stock Solution (Di-0S, Di-4S, Di-6S)	1mL	
ASB-00003614-005	Chondroitin Disaccharide Stock Solution (Di-0S, Di-4S, Di-6S)	5mL	
<b>OTHER ITEMS</b>			
ASB-00003613-002	Chondroitinase AC II(RG)	2 units	
ASB-00003613-010	Chondroitinase AC II(RG)	5 x 2 units	
ASB-00003592-001	Chondroitin Sulfate Control Sample (XRM)	1g	
ASB-00003592-005	Chondroitin Sulfate Control Sample (XRM)	5g	
ASB-00003608-005	Chondroitin Enzyme Buffer (RG)	5mL	
COL-00003609-000	Chondroitin HPLC column 150 x 4.6	1 column	
MTD-00003006-000	Chondroitin Enzymatic Digest HPLC Method	1 Method	
<b>KITS</b>			
KIT-00003589-OHK	Chondroitin AOAC HPLC Analysis Kit with HPLC column	1 kit	
KIT-00003588-00K	Chondroitin Analysis AOAC HPLC Refill Kit (no column)	1 kit	

### Kit contains:

1. Chondroitin Disaccharide Stock Solution 5mL
2. Chondroitinase AC II 5 x 2 units
3. Chondroitin Sulfate Control Sample (XRM) 1g
4. Chondroitin Buffer Solution 5mL
5. Chondroitin HPLC column 150x4.6 (Only in Kit with column)
6. Chondroitin sulfate enzymatic digest HPLC method

The ChromaDex™ Chondroitin Sulfate HPLC Analysis Kit contains all of the components you will need to run this method in your own laboratory.



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