

## Technical Data Sheet

### Nutraberry Black Raspberry Seed Powder

Product Code: BRSP-02

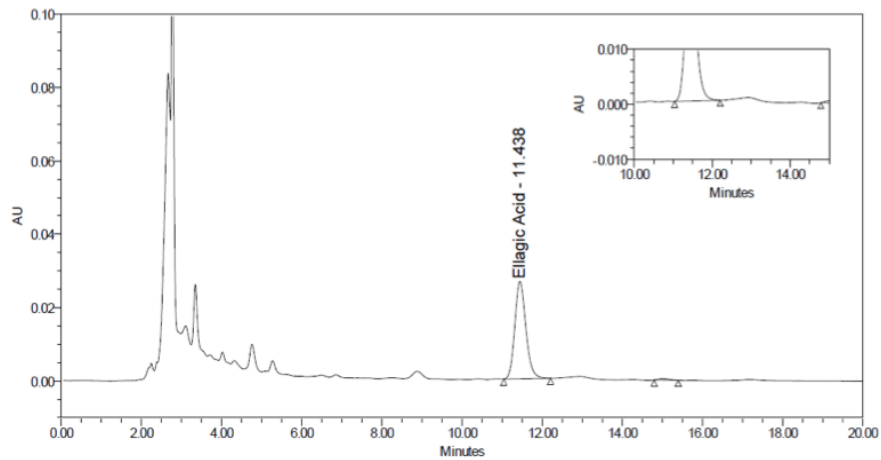
**Nutraberry Black Raspberry Seed Powder** is a non-extracted product of black raspberries (*Rubus occidentalis* L.). The “seed cake” of the crushed fruit is used intact without further processing. The starting material is ≈30% flesh before drying. The result is a full spectrum of naturally occurring compounds and ratios thereof derived from unaltered black raspberries inclusive of dietary fiber and the key components of ellagitannins and Vitamin E. Science identifies these compounds as antioxidants with a host of beneficial effects. The source of these compounds is from fruit grown and harvested in the state of Oregon where it is harvested only once per year. The processing of the “seed cake” is minimal, only drying and then grinding to provide the benefits of black raspberries and their antioxidant constituents.

#### TYPICAL CHARACTERISTICS

Description	Powder form of black raspberry seeds
Latin Binomial	<i>Rubus occidentalis</i> L.
Country of Origin	Grown and processed in the United States
Particle Size	90% through 70-mesh US
Appearance	Dark brown to black, fine powder

SPECIFICATIONS	LIMITS	METHODS
Botanical Identity	Conforms	HPTLC
Dietary Fiber	NLT 60%	AOAC
Vitamin E	NLT 40 IU/100 g	HPLC
Ellagitannins (as Ellagic Acid)	NLT 40 mg/100 g	HPLC
Oleic Acid (omega 9 fatty acid)	NLT 900 mg/100 g	GC
Linoleic Acid (omega 6 fatty acid)	NLT 5500 mg/100 g	GC
α Linolenic Acid (ALA)	NLT 3500 mg/100 g	GC
Total Polyphenols (as Gallic Acid)	NLT 1500 mg/100 g	UV-Vis
Anthocyanins (see Analytical Details)	NLT 400 mg/100 g	HPLC
Moisture	LT 9%	Loss on Drying
<b>Heavy Metals</b>		
Lead	LT 1.5 ppm	ICP-MS
Arsenic	LT 2.0 ppm	ICP-MS
Cadmium	LT 0.5 ppm	ICP-MS
Mercury	LT 0.5 ppm	ICP-MS
<b>Microbiology</b>		
Total Aerobic Plate Count	NMT 3,000 cfu/g	FDA-BAM
Yeast and Mold	NMT 100 cfu/g	FDA-BAM
Coliforms	Negative (LT 5 cfu)	FDA-BAM
<i>E. coli</i>	Negative (LT 5 cfu)	FDA-BAM
Salmonella	Negative	FDA-BAM
<i>Staph. Aureus</i>	Negative (LT 5 cfu)	FDA-BAM

## ANALYTICAL DETAILS – ELLAGITANNINS (AS ELLAGIC ACID)

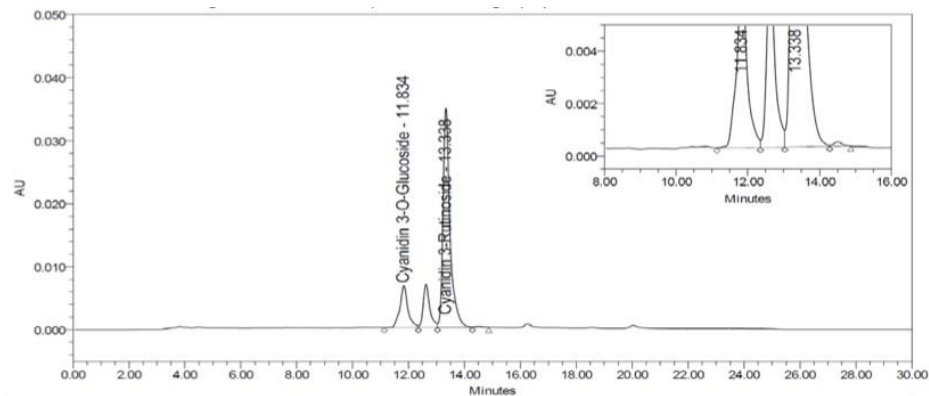


### Chromatographic Conditions:

Column: AP76 ODS Hypersil (250 x 4.6 mm)  
 Temperature: 25°C  
 Flow Rate: 0.8 mL/min  
 Injection Volume: 5 µL  
 UV Detection: 260 nm  
 Mobile Phase: Methanol  
 0.1% Phosphoric acid in Water

## ANALYTICAL DETAILS – ANTHOCYANINS

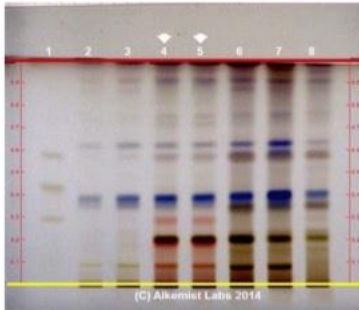
(AS DELPHINIDIN 3-GLUCOSIDE, DELPHINIDIN 3-RUTINOSIDE, CYANIDIN 3-O-GLUCOSIDE AND CYANIDIN 3-RUTINOSIDE)



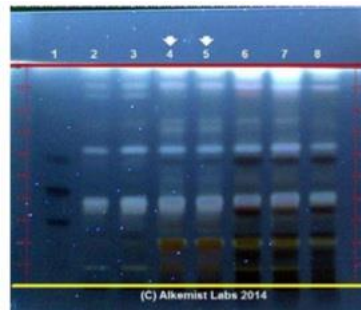
### Chromatographic Conditions:

Column: AP56 Lichrosorb RP18 (250 x 4.6)  
 Temperature: 35°C  
 Flow Rate: 0.8 mL/min  
 Injection Volume: 10 µL  
 UV Detection: 500 nm  
 Mobile Phase: Formic Acid:Water (10:90)  
 Formic Acid:Water:Acetonitrile (10:75:15)

## IDENTITY ANALYSIS (PROVIDED BY ALKEMIST LABS)



#1



#2

Title:	Black Raspberry Seed Powder
Plant Part:	seed
Sample Received:	01/17/14
Sample Description:	Clear Reclosable Plastic Bag
Form of Botanical:	crude plant powder
Appearance:	purple fine powder
Lot :	(111013-BR-V1) → Lanes 4(3 I), 5(3 I)
Sample :	AKV01714NUB1_2
Latin Name:	Rubus occidentalis L. [Rosaceae]
Reference Sample :	Lanes 2(2 I), 3(4 I) (AKV03014SHEF1) Rubus occidentalis (seed); Lane 6(3 I) (HG23309LCF) Rubus idaeus L. ssp. Ideaus (seed); Lane 7(3 I) (HG21609ANS) Rubus idaeus L. ssp. Ideaus (seed); Lane 8(3 I) (HG24709CGC) Rubus idaeus L. ssp. Ideaus (seed); authenticated by macroscopic, microscopic &/or TLC studies according to the reference source cited below, held at Alkemist Labs, Costa Mesa, CA.
Analyst:	JN, ML, JK, HT 42168
Sample Prep:	0.3g+3mL CH <sub>3</sub> OH sonicate/heat @-50° C ~ 1/2 hr.
Stationary Phase:	Silica gel 60, F <sub>254</sub> , 10 x 10 cm HPTLC plates
Mobile Phase:	chloroform: methanol: formic acid: water [6/2/1.4/0.1]
Detection:	(1) 10% Ethanolic H <sub>2</sub> SO <sub>4</sub> → 115° C 15 min → visible light (2) 10% Ethanolic H <sub>2</sub> SO <sub>4</sub> → 115° C 15 min → UV 365 nm
Reference Std:	Lane 1(3 I) (-)-Epigallocatechin Gallate (00005150-332, CHR), (-)-Epigallocatechin (00005145-074, CHR), (-)-Epicatechin Gallate (011M1480V, SigAl), (-)-Epicatechin Gallate (00005135-614, CHR), (-)-Epicatechin (EC) (00005125-002, CHR), Catechin (69h0543 Sig Al)
Reference Source:	Method Developed by Alkemists Pharmaceuticals SOP-700-0001-R3