



SPECIFICATION

Product: **Enzogenol® pine bark extract – Dry Powder**
 Botanical Species: ***Pinus radiata*** Plant part: **Bark** Solvent: **Water 100%**
 Manufacturer: **ENZO Nutraceuticals Ltd** Country of Origin: **New Zealand**

	SPECIFICATION	METHOD ¹
PHYSICAL TESTING		
Color	Brown	Visual
Taste	Bitter and Astringent	Taste
Moisture	< 6%	Loss on drying, oven method
Particle size	less than 5% > 106 µm (140 US-mesh)	Sieve analysis
Bulk density – untapped	> 0.34g/ml	Graduated cylinder
Bulk density - tapped	> 0.4 g/ml	Graduated cylinder & controlled packing force
Solubility (0.2% in water):	≤ 5% undissolved solids	Filtration & drying
CHEMICAL TESTING		
Proanthocyanidins % (w/w)	> 80%	HPLC
Catechin % (w/w)	> 0.5%	HPLC
Dihydroquercetin % (w/w)	> 1.0%	HPLC
pH (0.2% in water)	3.8 – 5.2	pH meter
MICROBIAL TESTING		
Total Count - Bacteria	< 1000 cfu/g	BP2009
Yeast & Mould Count	< 1000 cfu/g	BP2009
Bile-tolerant gram-negative bacteria (= Enterobacteriaceae and certain other gram negative bacteria)	< 100 cfu/g	BP2009
E. Coli	Negative in 1 g	BP2009
Salmonella spp	Negative in 10 g	BP2009
Staphylococcus aureus	Negative in 1 g	BP2009
HEAVY METAL TESTING		
Arsenic	< 1.4 ppm	ICP-MS
Cadmium:	< 0.3 ppm	ICP-MS
Lead:	< 0.5 ppm	ICP-MS
Mercury:	< 0.02 ppm	ICP-MS
HERBICIDE / PESTICIDE TESTING²		
Acidic Herbicides	< 0.01 ppm	Acidic Herbicides GCMS Analysis ³
Multiple Residues	< 0.01 ppm	Multiresidue GC Analysis ³
STATEMENTS / ADDITIONAL INFORMATION		
GMO	Enzogenol is free of any genetically modified organism or parts thereof, and no gmo is used in the production of Enzogenol.	
BSE	Enzogenol is free of BSE infectious agents. Enzogenol and its raw material have no contact with any animal matter.	



Allergen	Product does not contain and has no contact with any known allergens including milk, eggs, wheat, soybeans, peanuts, tree nuts, fish, celery, mustard, apples, and shellfish, and is gluten-free. No colours, no flavours, no sulphites.
Production Facility	Enzogenol is produced and packaged in a dedicated facility. Only the bark of New Zealand grown <i>pinus radiata</i> trees and deionised water are used in the production process of Enzogenol. No other food stuffs or raw materials enter the plant. Hence, there is no potential for cross-contamination from other food stuffs or materials.
Dietary Considerations	Suitable for Vegetarians Halal Certified Kosher Certified

¹Detailed descriptions of the testing methods used can be obtained on request from Enzo Nutraceuticals Ltd.

²Herbicide / Pesticide Testing are carried out periodically (at least twice annually) to confirm an established trend of results below limits of detection. The test results reported on Certificates of Analysis are representative.

³For detection limits see actual laboratory test results.

(Dr Matt Frevel, CSO)

27 Jan 2013

Date