

## Certificate of Analysis

Product: Black Pepper Oil (India)  
Botanical Name: *Piper nigrum*  
Origin: India  
Plant Part used: Shrub, dried fruit  
Extraction: Steam distilled

<b>Physical data</b>	<b><u>Specification<sup>2</sup></u></b>	<b><u>Result</u></b>
Appearance:	Clear free flowing liquid	Complies
Colour:	Colourless to pale straw yellow	Complies
Odour:	Charateristic	Complies
Specific Gravity at 20 <sup>0</sup> C:	0.8680 to 0.8900	0.8733
Refractive index at 20 <sup>0</sup> C:	1.4600 to 1.4900	1.4827
Optical Rotation:	+1.00 <sup>0</sup> to -25.00 <sup>0</sup>	-14.10 <sup>0</sup>

### Chromatographic Profile

<b>Sample</b>	<b>Component</b>	<b>Specification<sup>2</sup> Peak Area<sup>1</sup> (%)</b>	<b>Result Peak Area<sup>1</sup> (%)</b>
<i>Piper nigrum</i>	a-Pinene	2 to 20	9.25
	Sabinene	Trace to 15	8.13
	b-Pinene	5 to 20	8.79
	a-Phellandrene	Trace to 5	1.12
	3-Carene	Trace to 15	6.25
	d-Limonene	Trace to 25	13.95
	b-Caryophyllene	5 to 35	26.77