

Laboratory CSIR-National Botanical Research Institute, Rana Pratap Marg,
Lucknow, Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7972 (in lieu of T-1381)

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	DRUGS & PHARMACEUTICALS			
1.	Drugs and Pharmaceutical (Herbal Drugs/ Plant Extract/ Herbal Products/ Plant Based Pharmaceuticals)	Macroscopic and microscopic identification of following herbal drugs Abelmoschus moschatus, Aconitum balfourii, Acorus calamus, Aegle marmelos, Albizia lebbeck, Alhagi pseudalhagi, Allium cepa, Alpinia galangal, Althaea officinalis, Anogeissus latifolia, Anogeissus pendula, Arnebia euchroma, Arnebia nobilis, Artemisia parviflora, Asclepias curassavica, Baliospermum montanum, Basella alba, Berberis aristata, Berberis asiatica, Berberis chitria, Berberis lyceum, Berberis tinctoria, Bergenia ciliate, Bergenia ligulata, Bergenia stracheyi, Blumea lacera, Buchanania lanzan, Butea monosperma, Callicarpa macrophylla, Cassia fistula, Centella asiatica, Cinnamomum tamala, Coccinia grandis, Coleus	API, Part I, Vol. VI, 233-242, 2008	Qualitative

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		forskohlii, Convolvulus pluricaulis, Coscinium fenestratum, Crataeva nurvala, Croton tiglium, Curcuma aeruginosa, Curcuma amada, Curcuma aromatic, Curcuma haritha, Curcuma longa, Curcuma zedoaria, Desmodium gangeticum, Dillenia indica, Dioscorea deltoidea, Embelia ribes, Enicostemma hyssopifolium, Euphorbia prostrata, Euphorbia thymifolia, Euphorbia tirucalli, Ficus virens, Gymnema sylvestre, Hedychium spicatum, Hemidesmus indicus, Heracleum candicans, Holoptelea integrifolia, Holostemma ada-kodien, Inula racemosa, Ipomoea Turpethum, Jatropha glandulifera, Leucas cephalotes, Leucas plukenetii, Mahonia borealis, Malaxis acuminata, Merremia turpethum, Mesua ferrea, Moringa oleifera, Myrica esculenta, Nardostachys jatamansi, Nelumbo		

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		nucifera, Oroxylum indicum, Picrorhiza scrophulariifolia, Picrorhiza kurrooa, Piper betle, Piper chaba, Piper longum, Piper nigrum, Pluchea lanceolata, Polygonatum cirrhifolium, Portulaca oleracea, Prunus cerasoides, Pueraria tuberosa, Rauvolfia serpentine, Rauvolfia tetraphylla, Rubia cordifolia, Saussurea lappa, Sida acuta, Solanum indicum, Solanum xanthocarpum, Spondias pinnata, Stereospermum suaveolens, Streblus asper, Swertia angustifolia, Terminalia arjuna, Terminalia chebula, Trachyspermum ammi, Trianthema portulacastrum, Tribulus terrestris, Valeriana wallichii, Wedelia chinensis, Withania somnifera, Zingiber officinale, Ziziphus jujuba		
		Marker chemicals by (HPLC analysis) Caffeine, Catechin Hydrate, Fumaric acid,	IP, Vol. I, 2.4.14, Page 125-130,2007	0.001 % to 100 %

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		Gallic acid, Quercetin, Trans-Ferulic acid, Caffeic acid, Lupeol, Betulin crystalline, Vanillic acid, Syringic acid, Jasmonic acid, Myo-Inositol, B-sitosterol, 4-hydroxy benzoic acid, 4-hydroxy 3 methoxy benzoic acid, Bacoside A, Naringenin, Andrographolide, Ellagic acid, Tannic acid, Azadirachtin, Z-guggulsterone, Rutin, Reserpine, Curcumin, L-Ascorbic acid, Chlorogenic acid, P-Coumaric acid, Sinapic acid, Hesperetin, Kaempferol, Hesperidin, Capsaicin		
		Marker chemicals by (HPTLC analysis) Caffeine, Catechin Hydrate, Fumaric acid, Gallic acid, Quercetin, Trans-Ferulic acid, Caffeic acid, Lupeol, Betulin crystalline, Vanillic acid, Syringic acid, Jasmonic acid, Myo-Inositol, B-sitosterol, 4-hydroxy benzoic acid, 4-hydroxy 3 methoxy benzoic acid, Bacoside A, Naringenin, Andrographolide, Ellagic	NBRI –SOP-202 (04) Issue No : 04 Issue date : 31.07.2018	0.02 % to 20 %

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		acid, Tannic acid, Azadirachtin, Z-guggulsterone, Rutin, Reserpine, Curcumin, L-Ascorbic acid, Chlorogenic acid, P-Coumaric acid, Sinapic acid, Hesperetin, Kaempferol, Hesperidin, Capsaicin		
		Marker chemicals by LC-MS/MS Caffeine, Catechin Hydrate, Fumaric acid, Gallic acid, Quercetin, Trans-Ferulic acid, Caffeic acid, Lupeol, Betulin crystalline, Vanillic acid, Syringic acid, Jasmonic acid, Myo-Inositol, B-sitosterol, 4-hydroxy benzoic acid, 4-hydroxy 3 methoxy benzoic acid, Bacoside A, Naringenin, Andrographolide, Ellagic acid, Tannic acid, Azadirachtin, Z-guggulsterone, Rutin, Reserpine, Curcumin, L-Ascorbic acid, Chlorogenic acid, P-Coumaric acid, Sinapic acid, Hesperetin, Kaempferol, Hesperidin, Capsaicin	NBRI –SOP-202 (05) Issue No : 04, Issue date : 31.07.2018	Qualitative
		Marker chemicals by GCMS	NBRI –SOP-202 (33) Issue No : 04	1 % to 100 %

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		Caryophylline, Camphor, Cinnamic Aldehyde, D-Carvone, Ethyl vanilline, Eucalyptol, Eugenol, Isomenthone, L-Carvone, Linalool, Menthol, Menthone, R(+) Limonene, S(+) Limonene, Thymol, Vanillin, α -pinene, P-Cresol, Erucic acid, Oleanolic acid, Squalene, Behenic acid, Methyl arachidate, Methyl linoleate, Methyl stearate, Methyl linolenate, Methyl myristate, Methyl oleate, Methyl palmitate, (+)-Citronellal, Citral, Geraniol	Issue date : 31.07.2018	
		Carbon Isotopic mass ratio of plant materials	NBRI –SOP-202 (10) Issue No: 04, Issue date : 31.07.2018 (by IRMS)	(-)5 - (-) 35 per mil
		Ash value	API, part I, Vol. VI, 242-243, 2008	0.01 % to 30 %
		Tannins	AOAC, 9.110, page 187, 1984	0.1 % to 10 %
		Extractive value (%) (Alcohol and water soluble extractive value)	API, part I, Vol. VI, 243, 2008	0.1 % to 40 % 0.1 % to 50 %
II.	FOOD & AGRICULTURAL PRODUCTS			
1.	Vegetable Oils	Oil content	IS 3579:1966 (RA 2000) (soxhlet method)	0.01 % to 75 %
		Color value	IS 548 (Part 1): 1964 (RA 2010)	R: 0.1 to 70 Y: 0.1 to 70

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				B: 0.1 to 40 W: 0.1 to 3
		Oil content	NBRI –SOP-202 (34) Issue No : 04, Issue date : 31.07.2018 (by TD-NMR)	0.2 % to 45 %
		Specific gravity	IS 548 (Part 1): 1964 (RA 2010)	0.5 to 02
		Refractive index	IS 548 (Part 1): 1964 (RA 2010)	1.3 to 1.7
		Acid value/FFA content	IS 548 (Part 1): 1964 (RA 2010)	0.01 % to 60 %
		Fatty acid composition (Behenic acid, Methyl arachidate, Methyl linoleate, Methyl 7tate, Methyl linolenate, Methyl myristate, Methyl oleate, Methyl palmitate and Erucic acid)	IS 548 (Part 3): 1976 (RA 2009) by GLC	1 % to 100 %
		Fatty acid composition by (Behenic acid, Methyl arachidate, Methyl linoleate, Methyl 7tate, Methyl linolenate, Methyl myristate, Methyl oleate, Methyl palmitate and Erucic acid)	NBRI –SOP-202 (33) Issue No : 04 Issue date : 31.07.2018 (by GCMS)	1 % to 100 %
III.	COSMETICS & ESSENTIAL OILS			
1.	Essential Oil	Oil contents	NBRI-SOP-202 (17A) Issue No : 04, Issue date: 31.07.2018 (by hydro distillation/solvent extraction)	0.01 % to 20 %

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		Optical rotation	IS 326 (Part 4): 2005	$\pm 80^{\circ}$
		Refractive index	IS 326 (Part 5): 2006	1.3 to 1.7
		Specific gravity	IS 326 (Part 3): 2006	0.5 to 2.0
		Acid value	IS 326 (Part 7): 2006	0.01 % to 60 %
		Major chemical constituents of oil (Caryophylline, Camphor, Cinnamic Aldehyde, D-Carvone, Ethyl vanilline, Eucalyptol, Eugenol, Isomenthone, L-Carvone, Linalool, Menthol, Menthone, R(+) Limonene, S(+) Limonene, Thymol, Vanillin, α -pinene, P-Cresol)	IS 326 (Part 19): 1998 (RA 2002), (by GLC analysis)	1 % to 100 %
		Aromatic chemicals by GCMS (Caryophylline, Camphor, Cinnamic Aldehyde, D-Carvone, Ethyl vanilline, Eucalyptol, Eugenol, Isomenthone, L-Carvone, Linalool, Menthol, Menthone, R(+) Limonene, S(+) Limonene, Thymol, Vanillin, α -pinene and P-Cresol)	NBRI –SOP-202 (33) Issue No : 04 Issue date : 31.07.2018	1 % to 100 %
IV.	POLLUTION AND ENVIROMENT			
1.	Soil	pH	IS 2720 (Part 26): 1987 (RA 2002)	5 to 11
		Conductivity	IS 14767:2000	0.01 ms/cm to 50 ms/cm

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		Sulphate	IS 2720 (Part 27): 1977 (RA 2006)	5 µg/g to 1000 µg/g
		Total organic carbon	IS 2720 (Part 22): 1972 (RA 2006)	0.01 % to 10%
		Available Nitrogen	IS 14684:1999 (RA2005)	0.005 % to 5 %
		Total Nitrogen	IS 14684:1999 (RA 2005)	0.05 % to 5.0 %
		Available Phosphorous	OLSEN method 1954	1 µg/g to 100 µg/g
		Total Phosphorous	IS 6361:1971 (RA 2003)	0.1 mg/g to 100 mg/g
		Available Potassium	IS 9497:1980 (RA 1998)	1 µg/g to 100 µg/g
		Total Potassium	IS 9497:1980 RA 1998	5 µg/g to 100 µg/g
		Determinations of Heavy metals (Cr, Cu, Cd, Mn, Mg, Fe, Ni, Zn, Se)	NBRI-SOP-202 (06) AAS/Issue No : 04 Issue date : 31.07.2018	0.1 mg/kg to 10 mg/kg
		Determinations of Heavy metals (Cr, Cu, Cd, Mn, Mg, Fe, Ni, Zn, Se, Pb, As)	NBRI –SOP-202 (35) HPLC-ICP-MS Issue No : 04 Issue date : 31.07.2018 using HPLC-ICP-MS	0.001 mg/kg to 10 mg/kg
V.	WATER			
1.	Potable water	pH	APHA 4500 H+B, 4-90, 21 ^{ed} . 2005	1 to 14
		Conductivity (µS)	APHA 2510-B, 2-47 to 2-48, 21 ^{ed} 2005	0.01 to 100
VI.	RESIDUE IN WATER			
1.	Water	Heavy metals (AAS and ICPMS)		
		Cr	APHA 2012	0.03 mg/Liter to 10 mg/Liter
		Cu	APHA 2012	0.003 mg/Liter to 10 mg/Liter

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		Cd	APHA 2012	0.002 mg/Liter to 5 mg/Liter
		Mn	APHA 2012	0.05 mg/Liter to 5 mg/Liter
		Fe	APHA 2012	0.02 mg/Liter to 10 mg/Liter
		Ni	APHA 2012	0.01 mg/Liter to 5 mg/Liter
		Zn	APHA 2012	0.2 mg/Liter to 5.0 mg/Liter
		Pb	APHA 2012	0.01 mg/Liter to 1.0 mg/Liter
		Se	APHA 2012	0.01 mg/Liter to 2 mg/Liter
		As	APHA 2012	0.005 mg/Liter to 2 mg/Liter
VII.	PLANT AND PLANT PRODUCTS			
1.	Plant and Plant Products	Heavy metals (AAS and ICPMS)		
		Cr	NBRI-SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.1 mg/kg to 10 mg/kg
		Cu	NBRI-SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 15 mg/kg
		Cd	NBRI-SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 5 mg/kg
		Mn	NBRI-SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.1 mg/kg to 10 mg/kg

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		Fe	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.4 mg/kg to 100 mg/kg
		Ni	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 5 mg/kg
		Zn	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	02 mg/kg to 10 mg/kg
		Pb	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 1.0 mg/kg
		Se	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 2 mg/kg
		As	NBRI –SOP-202 (06 & 35) Issue No : 04 Issue date : 31.07.2018	0.05 mg/kg to 2 mg/kg

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