BOTANICAL REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

QF 041-V4

N° and version : CA090.4

Product name	Valeriana officinalis roots and rhizomes		
Batch number	BS0429	Reference	B9047
Latin name	***Valeriana officinalis* L.**		
Family	Capriofoliaceae		
Part used	Roots and rhizomes		
Validation date	Sept 2022	Retest date	Sept 2027
Storage condition	Protected from light, Keep below 25°C		

CONCLUSION OF STUDIES

ACCEPTATION CRITERIA	SPECIFIC MARKERS	PROFILE
ORGANOLEPTIC	Characteristic odour, sweetish, spicy and bitter taste	Compliant
MICROSCOPY / MACROSCOPY	Cells containing a pale brown resin and droplet of essential oil (1), lignified reticulately-thickened vessels (2), Group of rectangular sclereids (3), Starch granules (4)	Compliant
TLC / HPTLC	Valerenic acid	Compliant
HPLC / UHPLC	Chlorogenic acid, Pinoresinol-4,4'-di-O-beta-D-glucoside, Hydroxyvalerenic acid, Valerenic acid, Valtrate, Isovaltrate	Compliant
DNA	MatK, RbcLAF	Compliant

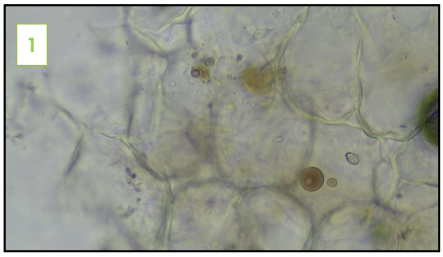
Compiled by : Technical Director
Signature :

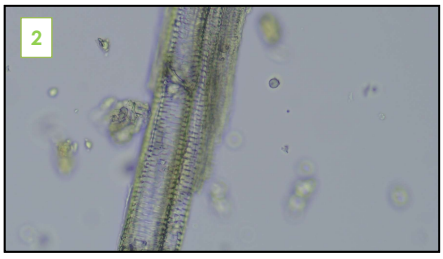
Released by : Scientific Director
Signature :

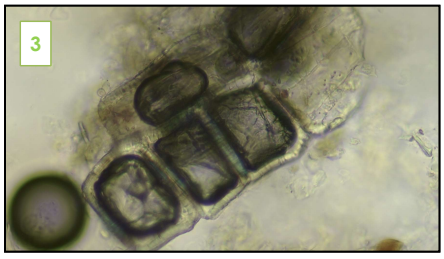
BOTANICERT
Certification botanique
et Phyto-chimique
Espace Jacques-Louis Lions
4, Traverse Dupont
06130 Grasse - France
Tél : +33 (0)4 89 85 60 27
email : contact@botanicert.com

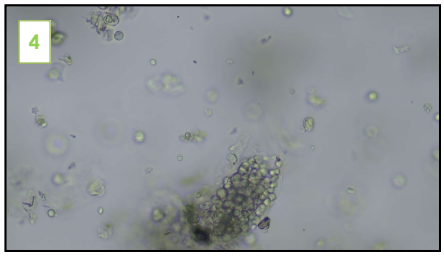
GENERAL CONCLUSION — **COMPLIANT**

MICROSCOPY / MACROSCOPY STUDY



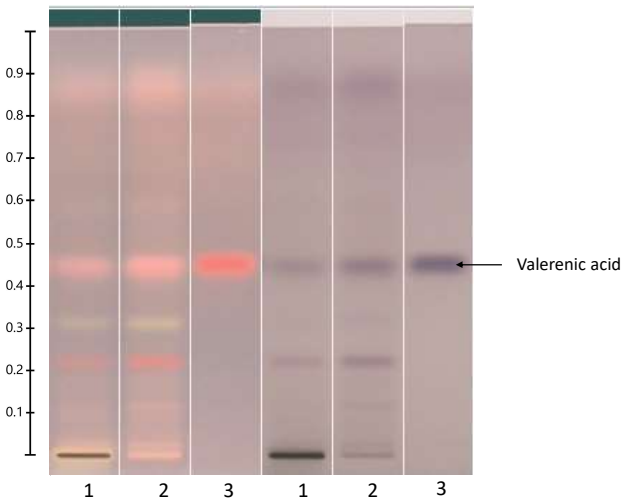






TLC / HPTLC STUDY

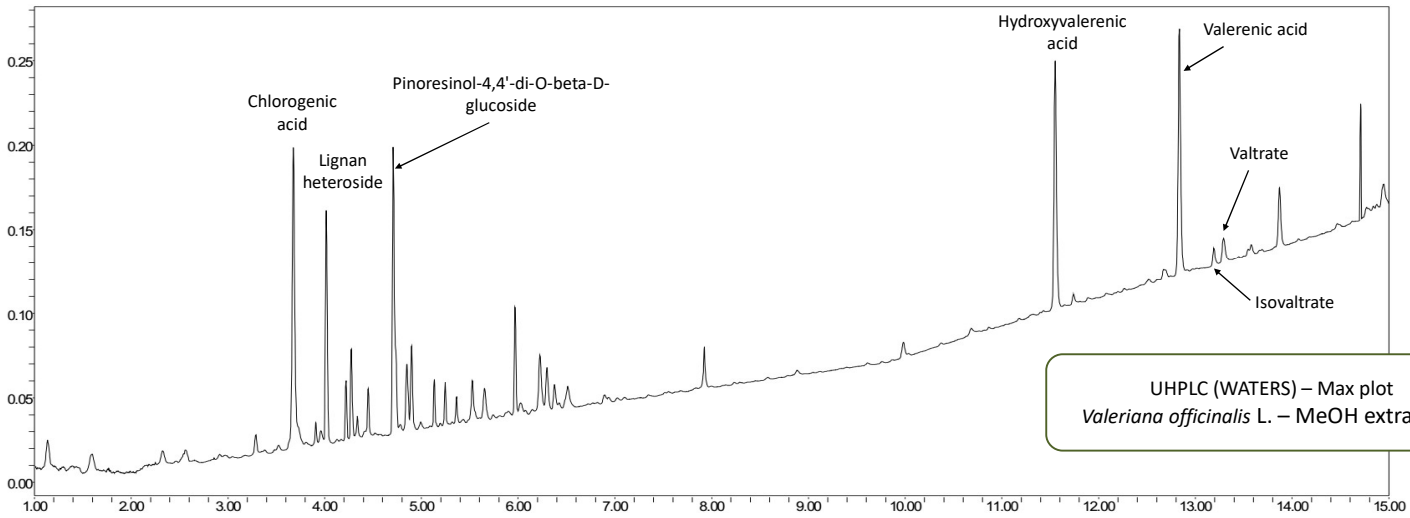
HPTLC (CAMAG)
Under visible light and 366 nm after derivatization



1: *Valeriana officinalis* L. – MeOH extraction
2: *Valeriana officinalis* L. – Toluene extraction
3: Valerenic acid (Analytical standard)

CHROMATOGRAPHIC CONDITION	
PLATE	SiOH
MOBILE PHASE	Hexane/Ethyl Acetate/Acetic Acid (65/35/0.5) (v/v/v)
DERIVATIZATION	Anisaldehyde
DETECTION	Under 366 nm and visible light after derivatization
SAMPLE'S PREPARATION	1 g into 10 g of solvent – sonicate during 10 minutes
VOLUME APPLICATION	2 µl
MARKERS	Valerinic acid
COMMENTS	All expected compounds are found

HPLC / UHPLC STUDY



UHPLC (WATERS) – Max plot
Valeriana officinalis L. – MeOH extraction

CHROMATOGRAPHIC CONDITION	
COLUMN	C18 or equivalent
MOBILE PHASE	H2O / MeOH or H2O / ACN
DETECTION	Max plot: Valerenic acids, Lignans, Hydroxycinnamic acids, Valpotriates
SAMPLE'S PREPARATION	1 g into 10 g of solvent – sonicate during 10 minutes
VOLUME	1 µl (UHPLC) or 10 µl (HPLC)
MARKERS	Chlorogenic acid, Pinoresinol-4,4'-di-O-beta-D-glucoside, Hydroxyvalerenic acid, Valerenic acid, Valtrate, Isovaltrate
COMMENTS	All expected compounds are found

DNA STUDY

DNA SEQUENCIES	
MATK	CTATGTATTAGTTTATCTAATACCGTACCCAGCCCATTTGGAAATTTTGGTTCAAGTTCT TCGCTACTGGGTAAAAGATGTCCCTTCTTTGCATTTATTACGAGTCTTTCTCCACAACTG GACGAGTTCTTTTATTCCAAAGAAAGTCAGTCCTTTTTTTTCAAAACGAAAGAAAAGATT TTTCTTCTTCCTGTATAATTCTTATCTATGTGAATACGAATCCATCTTAGTCTTTCTACG TAACCAATATTCTCATTTACAATCAACNGCTTTTGGAGCGCTTGTTGAACGGATATATTT ATACGAAAAATTAGAACTTCTCGTAGAATTCTTTGCTAAAGATTTTCAAGTAAATCTATG GTTGTTCAAGGATCCCTTGATGCATTATGTTAGGTATCAAGGAAAGTCAATTTTCTCTTC AAAGGATAGTGTTCTTTTCATGCATAAATGGAAAGATTATTTGATACGTTTCTGCCAATG GCATTTTTACCAGTACTTTCAACCAGTAAGGGTCTATATAAACCATTTATCCAAGCATTC CCTCGATCTTATGGGCTATCTTTCAAGTGTGCGGCTAACCCCGTTACAGATATGCAGTCA AACGCTAGAATATTCATATCTACTGGATACTGCGGGTAAGAAGTTCGATACCCTTGTTCC AATTCTTCCTCTGATTGGATCATTGGTTAAAGCGCAATTTTGTAACGGATTAGGGTATCC TATTAGTAAGGTAGTTTGGGCA
RBCLAF	AATTGACTTATTATACTCCTGACTATGAAACTAAAGATACTGATATCTTGGCAGCATTCC GAGTAACTCCTCAACCGGGAGTTCCACCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAAT CTTCAACTGGTACATGGACAACTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACA AAGGGCGATGCTACCACATCGAGCCTGTTGCTGGAGAAGAAAGTCAATTTATTGCTTATG TAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAATATGTTTACTTCTATTG TGGGTAATGTATTTGGGTTCAAAGCCCTGCGCGCTCTACGTTTGGAAGATCTGCGAATCC CTATTGCTTATGTTAAAACTTTCCAAGGTCCGCCTCACGGTATCCAAGTTGAGAGAGATA AACTGAACAAGTACGGTCGTCCCCTATTGGGATGTACTATTAAACCTAAATTGGGGTTGT CTGCTAAAAACTATGGTAGAGCGGTTTATGAATGTCT