Particles search
Gelsemium sempervirens

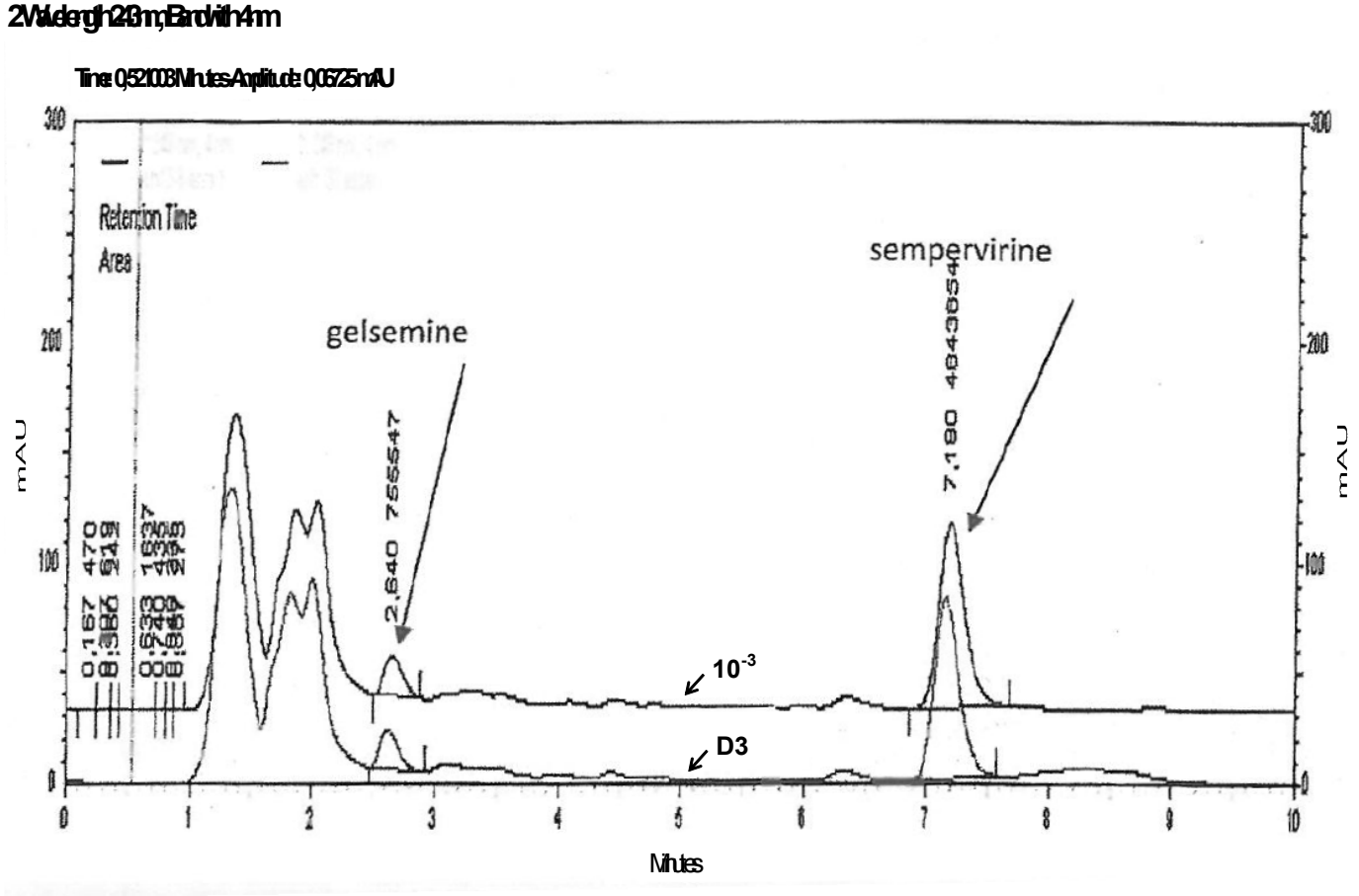
MD Michel Van Wassenhoven

High Performance Liquid Chromatography. HPLC-UV

- **Gelsemium sempervirens**

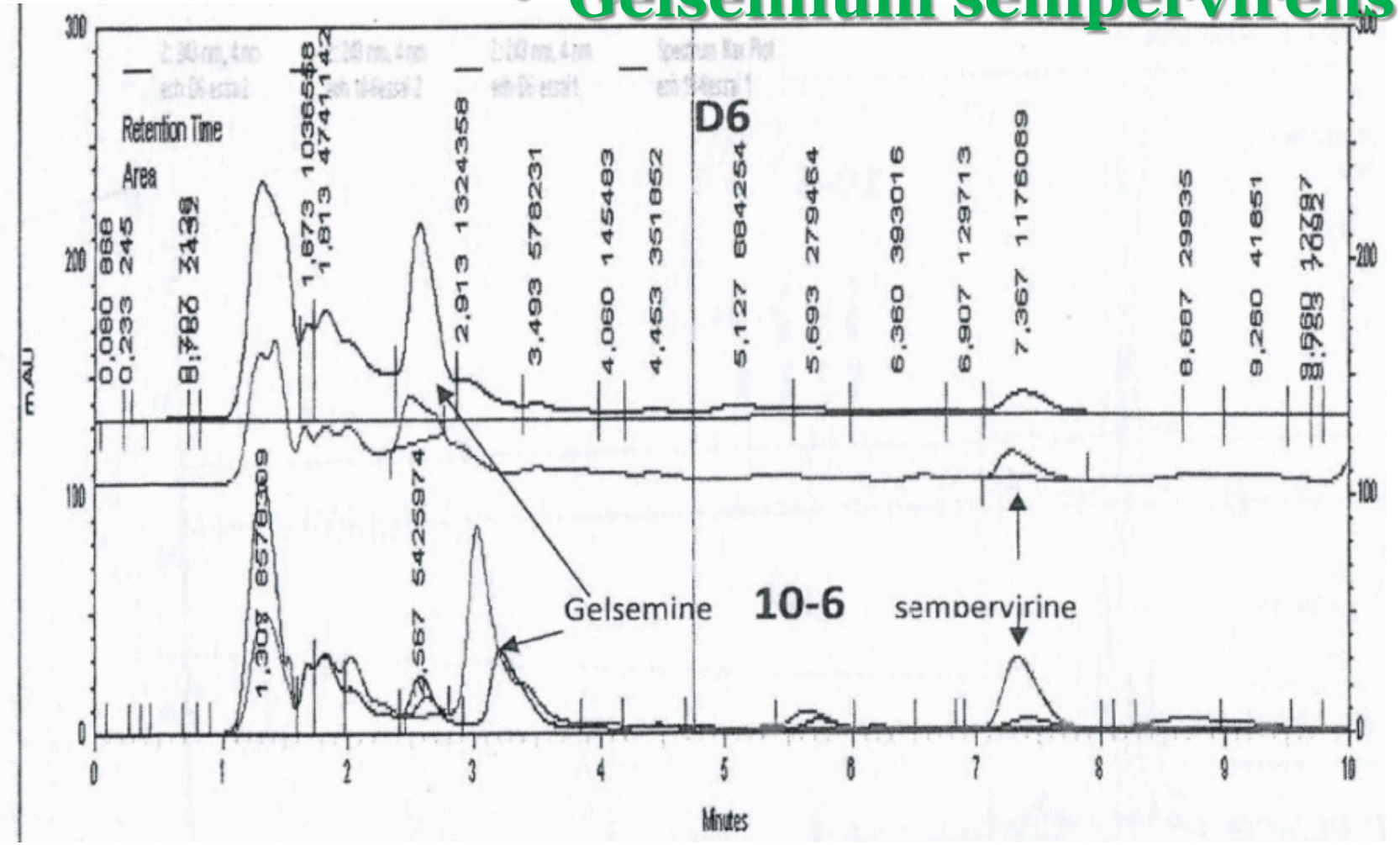
High Performance Liquid Chromatography. HPLC-UV

- **Gelsemium sempervirens**



High Performance Liquid Chromatography. HPLC-UV

- **Gelsemium sempervirens**



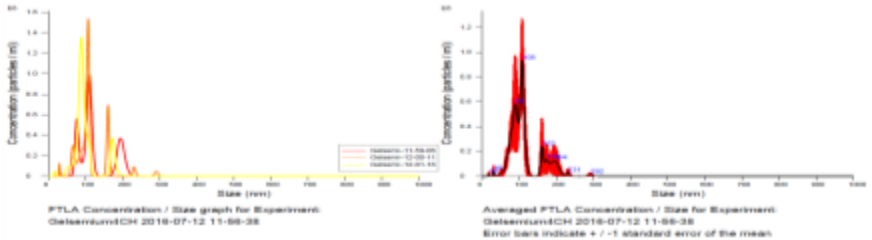
High Performance Liquid Chromatography. HPLC-UV

• Gelsemium sempervirens

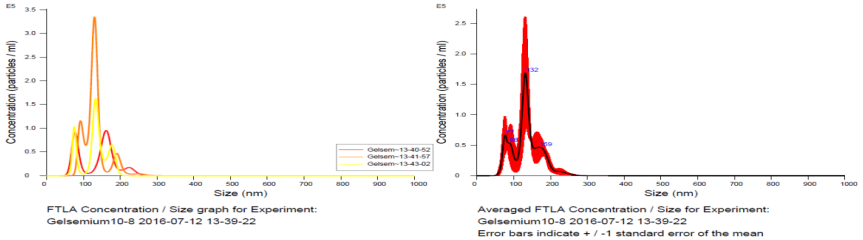
	Sempervirine	Gelsemine
	(Mean ± standard deviation)	(Mean ± standard deviation)
Mother Tincture (dilution 50x)	577.1 µg/ml ± 1.1	354.0 µg/ml ± 1.5
Mother Tincture (dilution 20x)	577.5 µg/ml ± 3.8	360.2 µg/ml ± 0.3
1D	165.5 µg/ml ± 1.7	116.1 µg/ml ± 1.7
10^{-1}	179.0 µg/ml ± 0.8	111.6 µg/ml ± 1.7
2D	16.1 µg/ml ± 1.8	15.5 µg/ml ± 1.5
10^{-2}	16.0 µg/ml ± 2.5	17.9 µg/ml ± 5.1
3D	1.51 µg/ml ± 1.8	1.44 µg/ml ± 2.2
10^{-3}	1.56 µg/ml ± 2.7	1.44 µg/ml ± 3.3
4D	0.117 µg/ml ± 8.3	0.115 µg/ml ± 2.8
10^{-4}	0.117 µg/ml ± 5	0.112 µg/ml ± 2.7
5D	0.00722 µg/ml ± 11.1	0.01076 µg/ml ± 11.2
10^{-5}	0.00749 µg/ml ± 2.4	0.01074 µg/ml ± 0.7
6D	Non quantifiable	Non quantifiable
10^{-6}	Non quantifiable	Non quantifiable

NTA : Nanoparticle Tracking Analysis

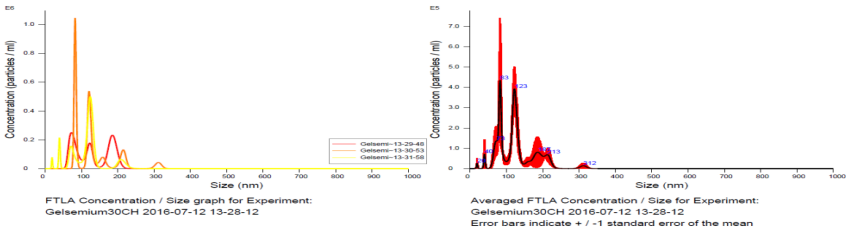
Gelsemium 4CH



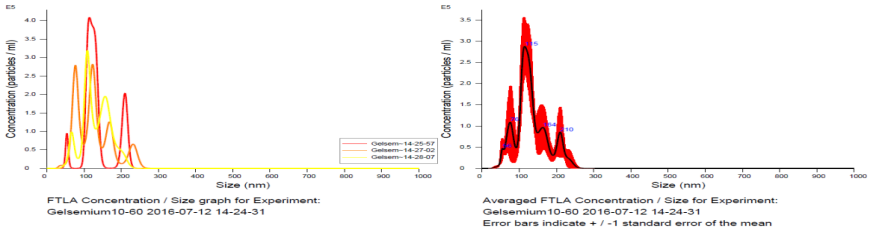
Gelsemium 10^{-8}



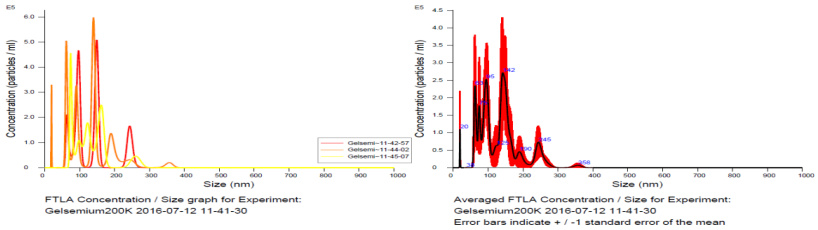
Gelsemium 30CH



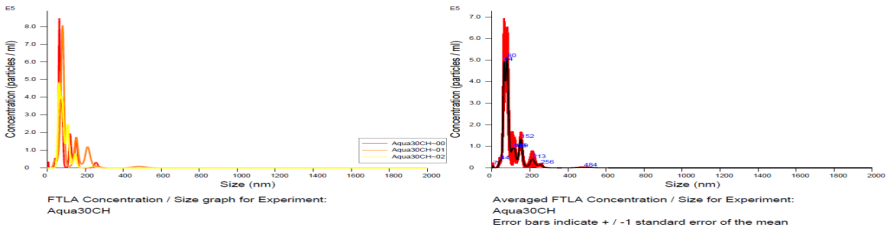
Gelsemium 10^{-60}



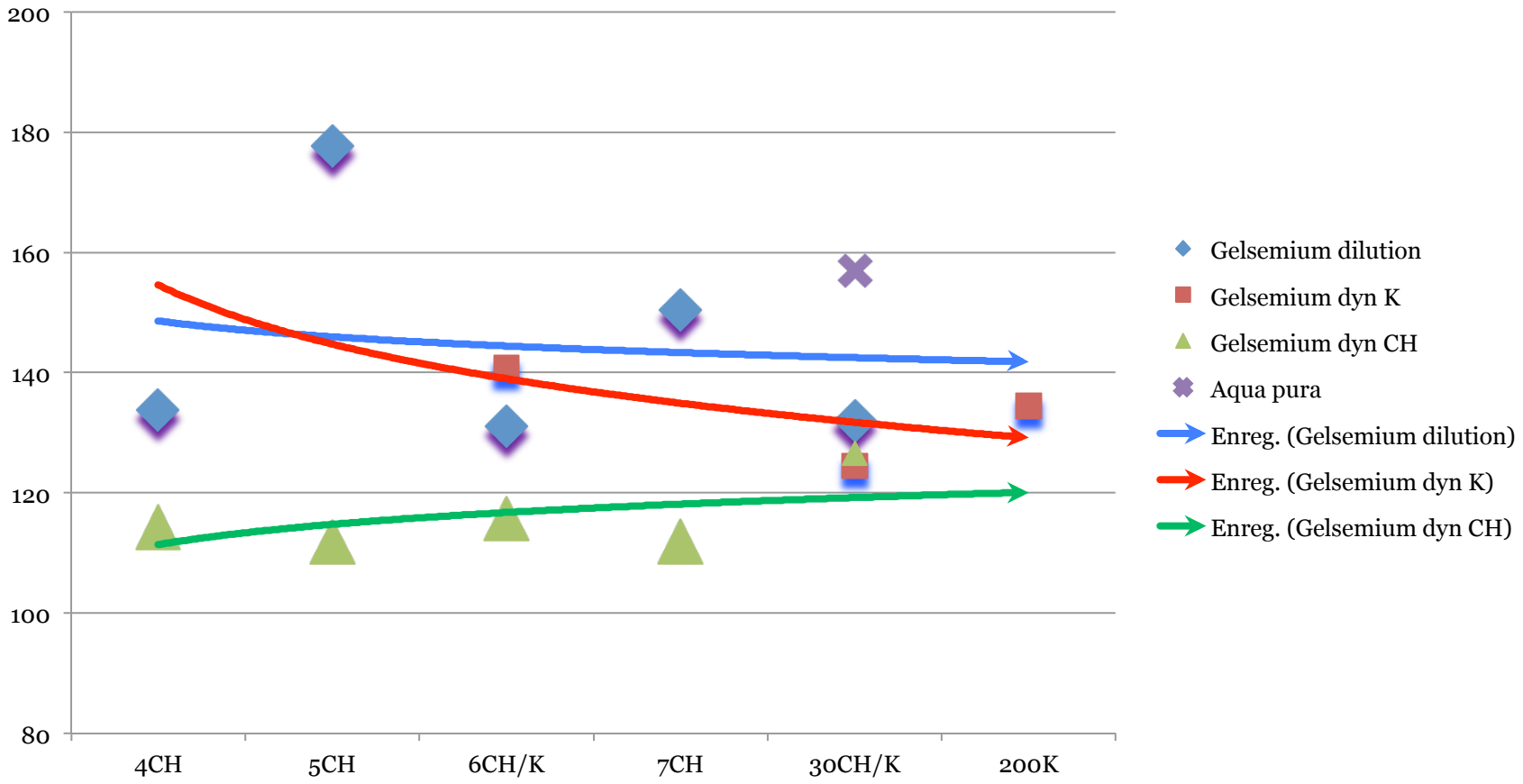
Gelsemium 200K



Aqua Pura 30CH (Glass containers)

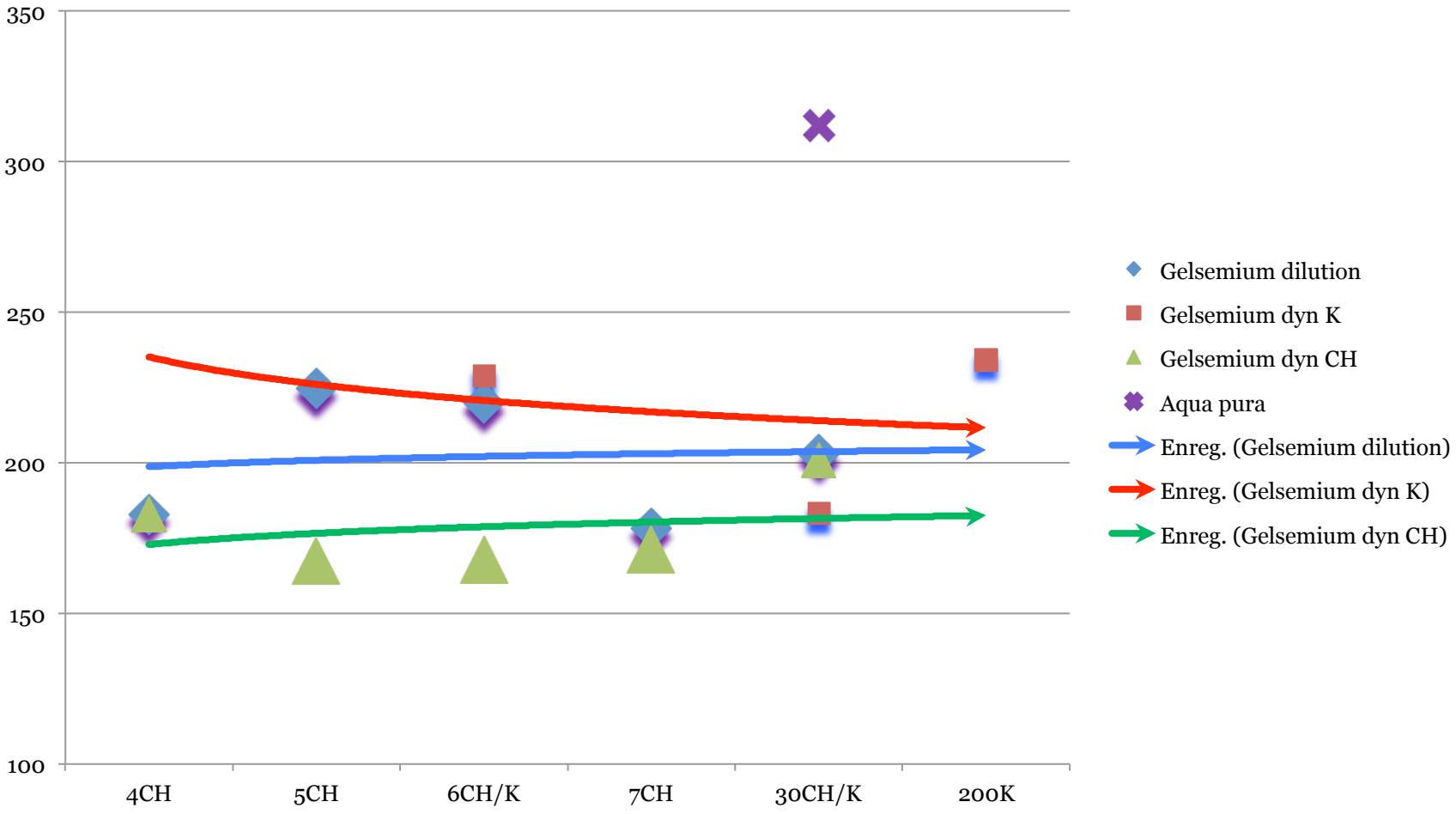


Mean particules sizes in nanometers.
(Gelsemium and controls).



Particules sizes distribution (D90) in nanometers.

(Gelsemium)



NTA : Nanoparticle Tracking Analysis

- Conclusions.
- Particles exist even in highest dilutions but in very low quantities in a relatively stable concentration.
- Compared with a metal or potentized water control in glass containers, the concentration of particles is similar in all samples. Only for K potencies is the amount of detectable particles higher.
- There is a clear difference for all aspects between potentized Gelsemium and potentized water control prepared in PET containers.
- This PET water control is at the limit of the NTA methodology, the visualized particles are considered here as non-homogenous artefacts.
- The nature of the particles needs further identification by SEM/EDS.

Lyophilisation process

- **Gelsemium sempervirens**

SEM/EDX = Scanning Electron Microscopy with X-ray microanalysis.

Starting from 400cc (20 x 20cc 4CH samples), lyophilized (concentrated) we are able to identify these particles. 200cc of 200K and 30CH, contains also particles !

SEM/EDX

- **Gelsemium sempervirens**

Solution frozen to -120°C

500cc glass ball, negative pressure

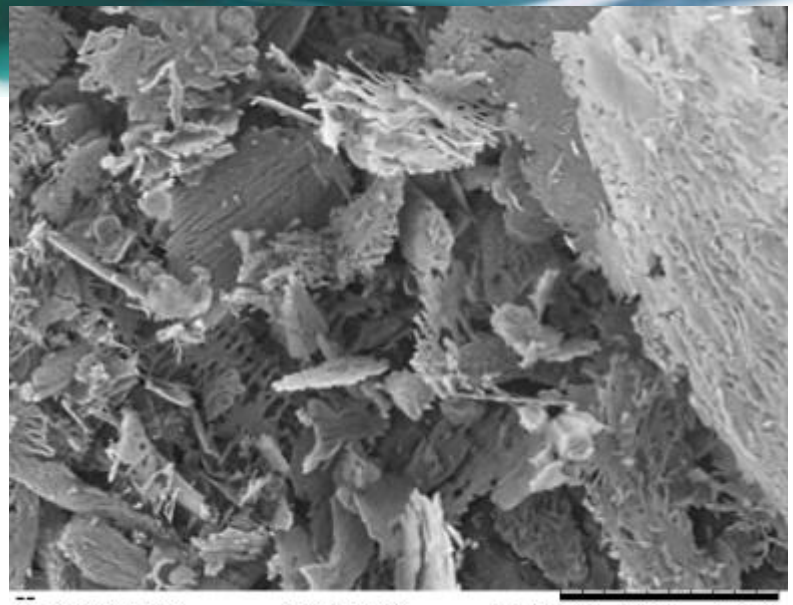
Slowly coming back at room C°.

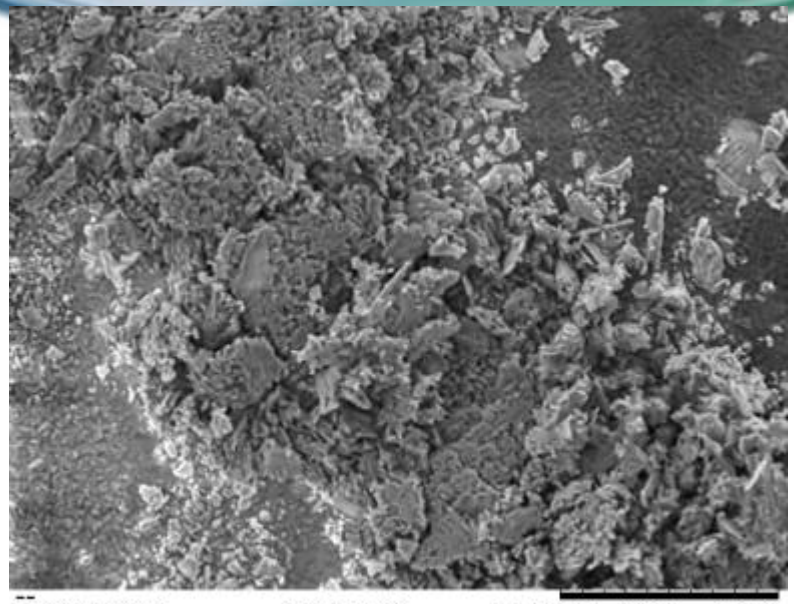
Process repeated several times

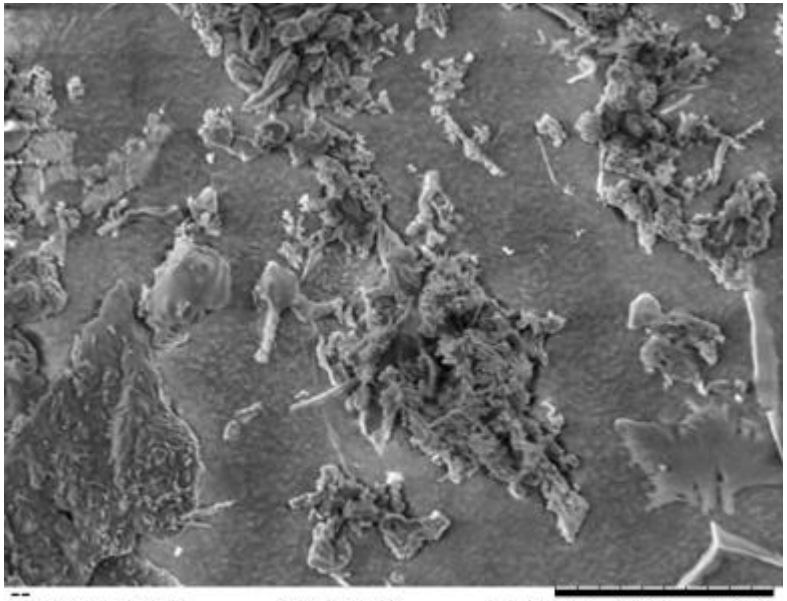
Residual material collected & weighted.

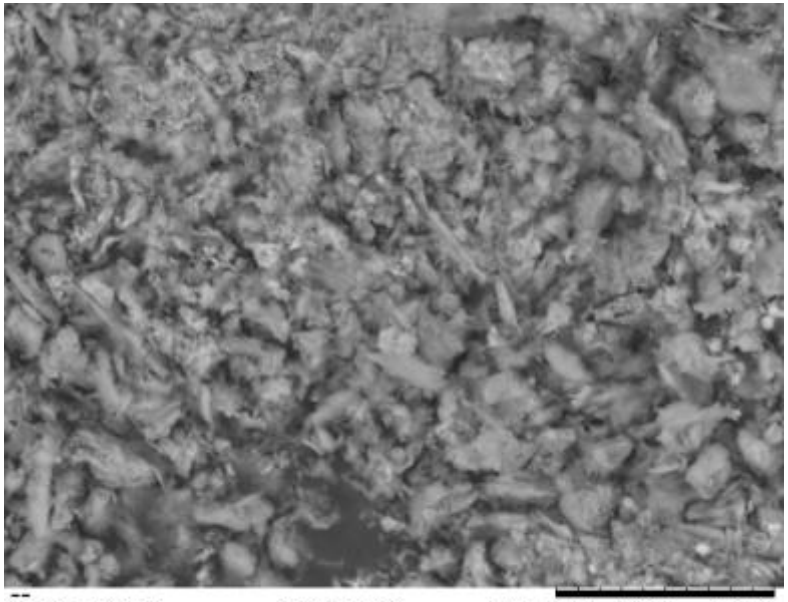
Quantities on obtained dry lyophilized material

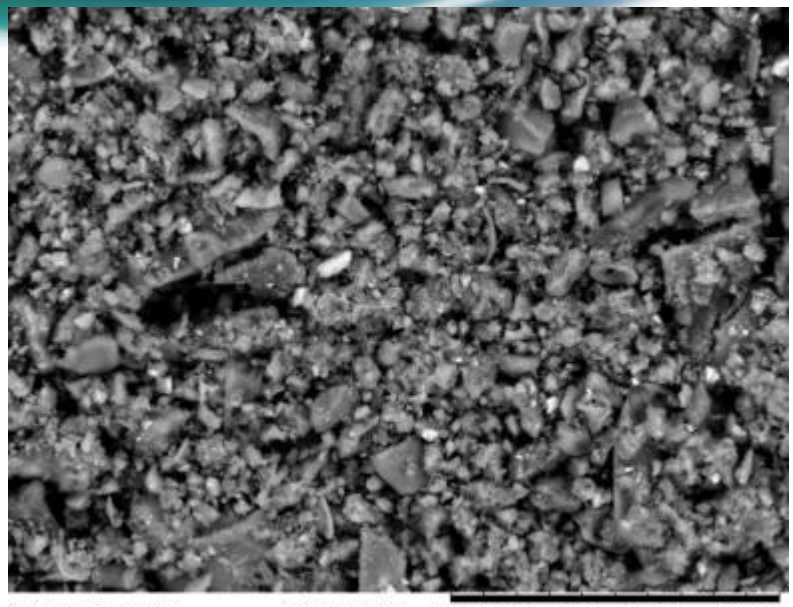
	Uncertainty/g*	Gelsemine /g	Real dry material/g
MT		360.200µg +/- 0,3	
1 D	+/- $3x10^{-9}$	116.100µg +/- 1,7	
2 D	+/- $3x10^{-9}$	16.500µg +/- 1,5	
3 D	+/- $3x10^{-9}$	1.440µg +/- 2,2	
4 D	+/- $3x10^{-9}$	115µg +/- 2,8	
5 D	+/- $3x10^{-9}$	10,76µg +/- 11,2	
6 D (3C)	+/- $3x10^{-9}$	NQ (In theory +/-1µg)	
4C	+/- $3x10^{-9}$	In theory +/-0,01µg	**0,042mg = 42µg**
30C	+/- $3x10^{-9}$	In theory +/-10^{-54}µg	**0,036mg = 36 µg**
200K	+/- $3x10^{-9}$	In theory +/-10^{-396}µg	**0,0305mg = 30,5 µg**
Diluted 10^{-60}	+/- $3x10^{-9}$	In theory +/-10^{-54}µg	**0,071mg = 71 µg**
Pure aqua 30C	+/- $3x10^{-9}$	In theory +/-10^{-54}µg	**0,002mg = 2 µg**
Cuprum 30C	+/- $3x10^{-9}$	In theory +/-10^{-54}µg	**0,001mg = 1 µg**


4CH GELS 0001 2016/11/29 I L UD8.2 x2.0k 30 µm
SYSMEX-Hitachi TM3030PLUS


30C Gels 0001 2016/11/29 I L UD8.3 x2.0k 30 µm
SYSMEX-Hitachi TM3030PLUS

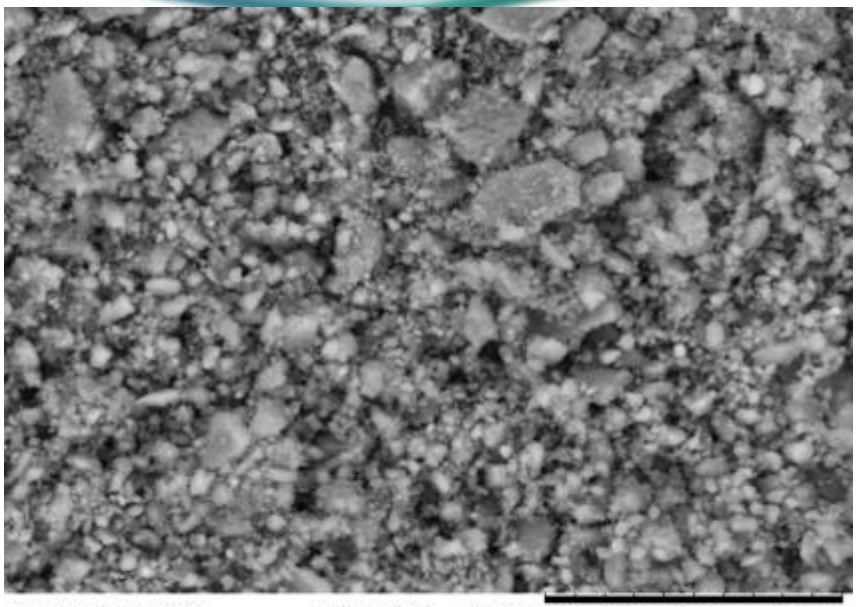

200K GELS 0001 2016/11/29 I L UD8.4 x2.0k 30 µm
SYSMEX-Hitachi TM3030PLUS


GELS -60 0001 2016/11/29 N M D8.3 x2.0k 30 µm
SYSMEX-Hitachi TM3030PLUS



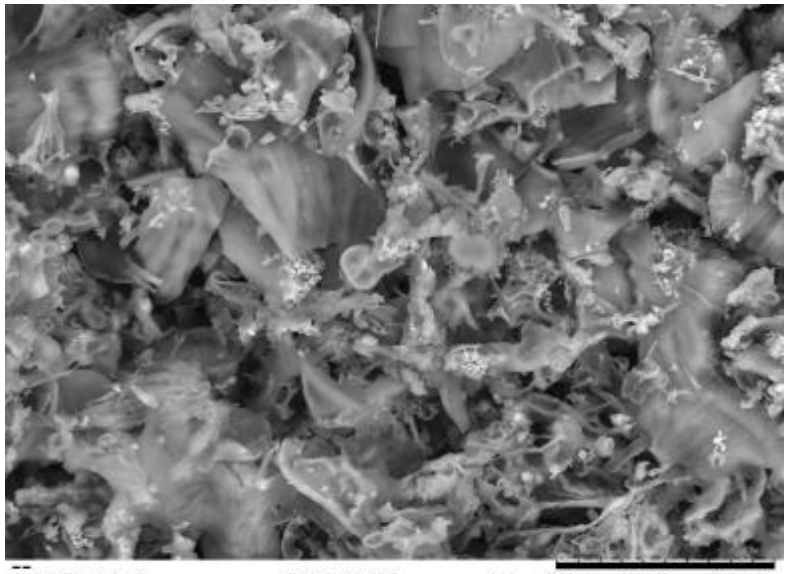
CUPR 30C 0000 2016/04/26 12:13 HM D8.0 x1.8k 50 µm

Hitachi TM3030PLUS Qrum30C



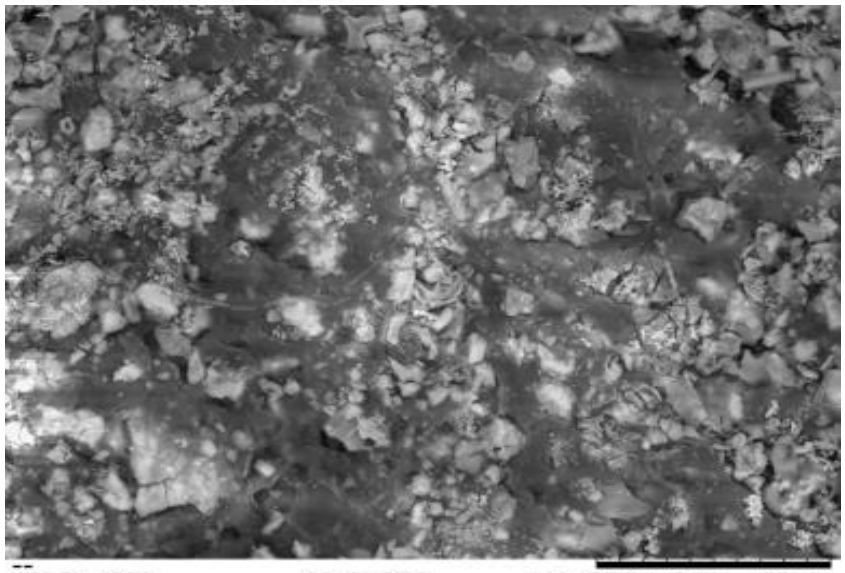
Aqua 30CH 0000 2016/04/26 12:28 HM D8.0 x2.5k 30 µm

SYSMEX-Hitachi TM3030PLUS



Si30CH 0000 2016/12/28 HL D8.1 x2.0k 30 µm

SYSMEX-Hitachi TM3030PLUS



K30CH 0000 2016/12/28 HM D8.0 x2.0k 30 µm

SYSMEX-Hitachi TM3030PLUS

SEM

- **Gelsemium sempervirens**

Conclusions:

- **Clearly it is possible, using this methodology, to differentiate visually Gelsemium sempervirens in several potentisations from controls or other remedies.**
- **CH and K preparations generate specific images.**
- **Quantities of collected material are much higher for plants than for metals or water control.**

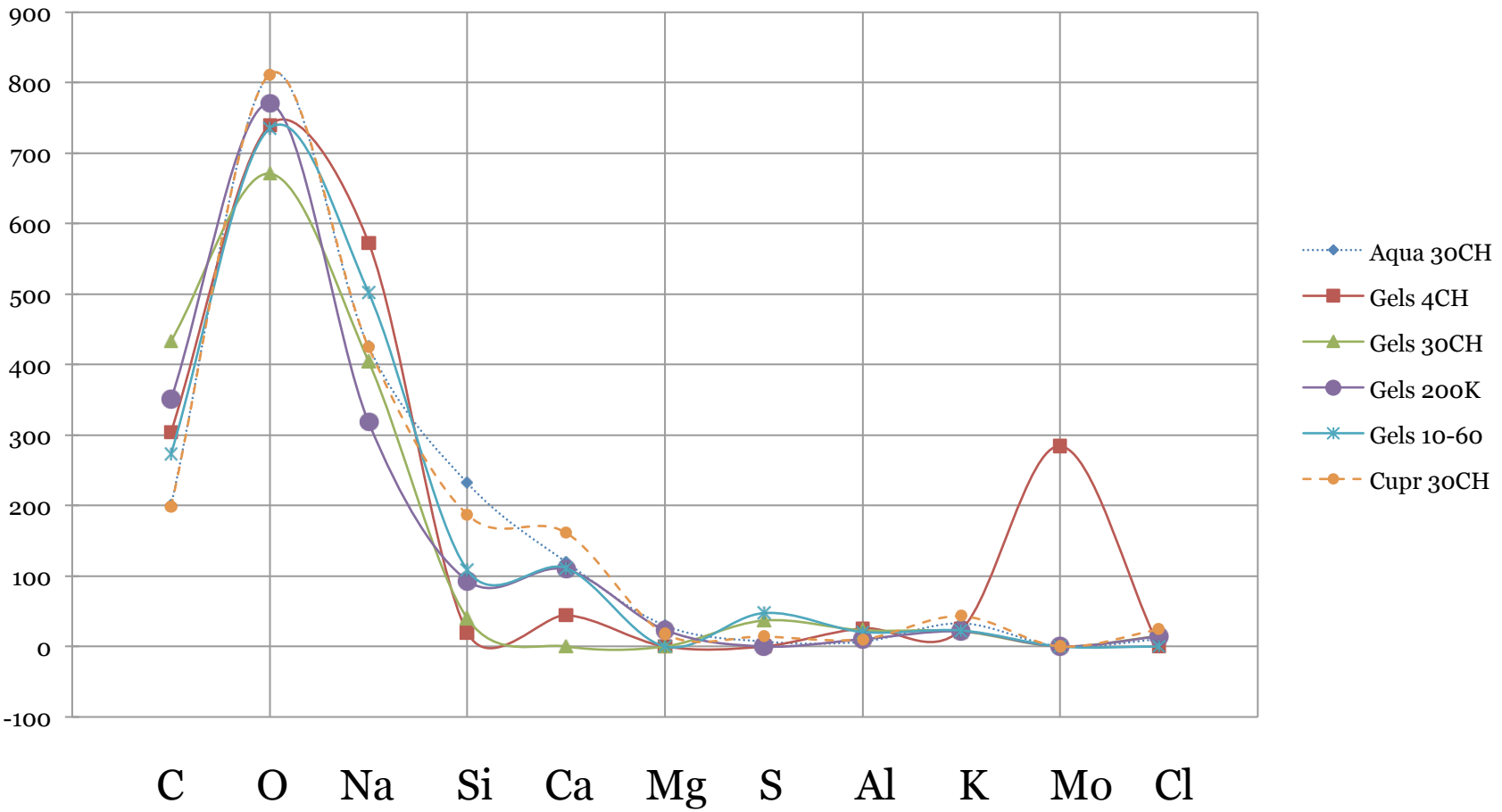
EDX

- **Gelsemium sempervirens**

EDX =

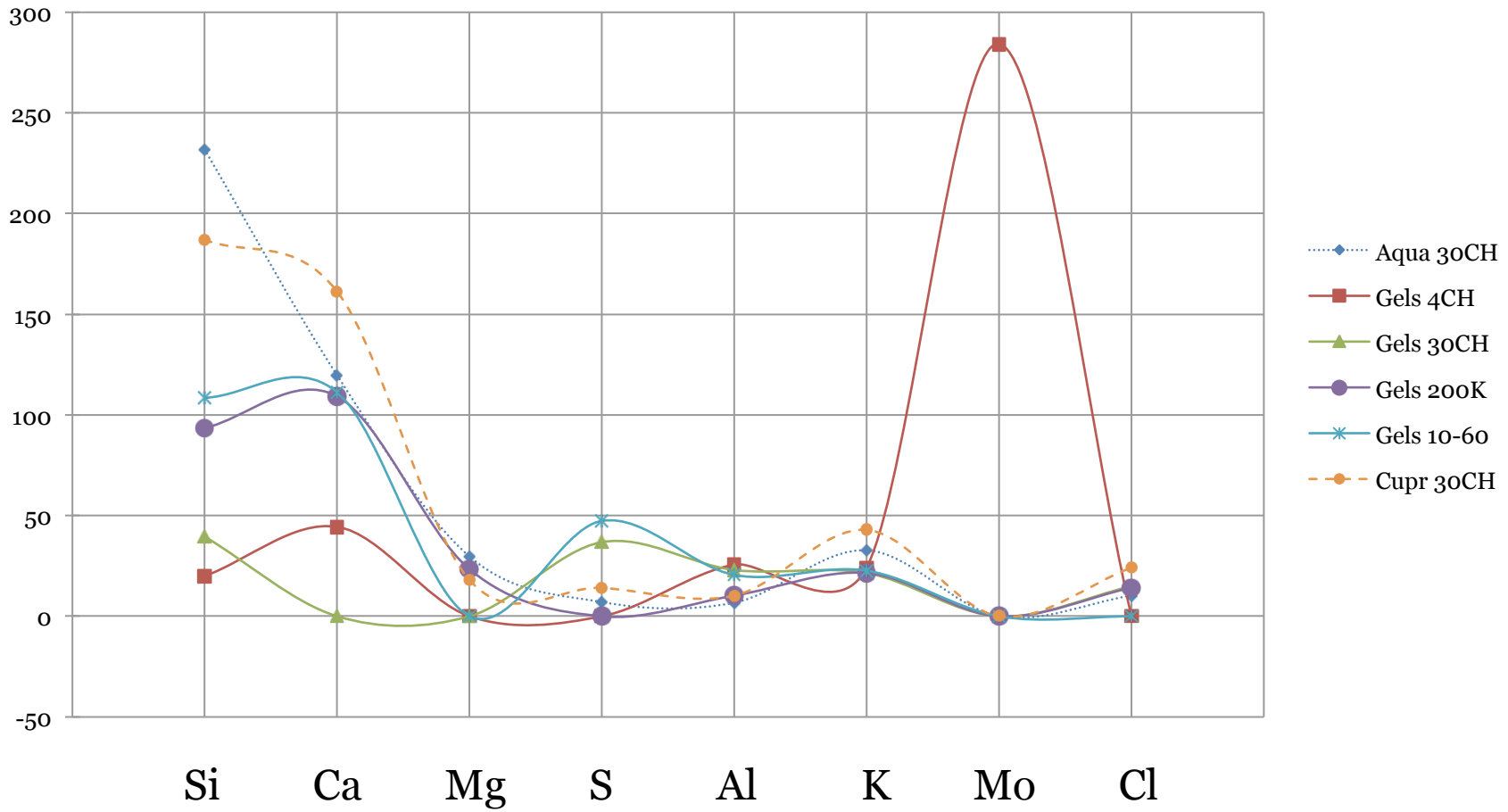
Electron Microscopy with X-ray microanalysis is allowing the chemical analyze of the observed material.

Identified chemistry in dilutions/potentizations (atom% * atomic mass * µg quantity)



There is a clear difference in chemistry between the different samples. The proportion of Carbon, Oxygen, Sodium are always high, Silicium and Calcium are also good discriminant factors. Molybden is a specific compound of plant roots.

Identified chemistry in dilutions/potentizations
(atom% * atomic mass * µg quantity)

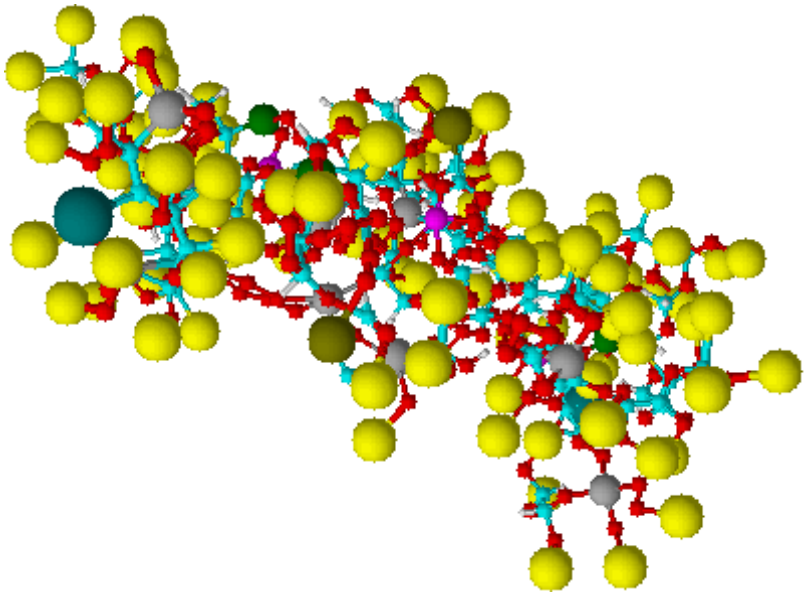


There is a clear difference in chemistry between the different samples. The proportion of Carbon, Oxygen, Sodium are always high, Silicium and Calcium are also good discriminant factors. Molybden is a specific compound of plant roots.

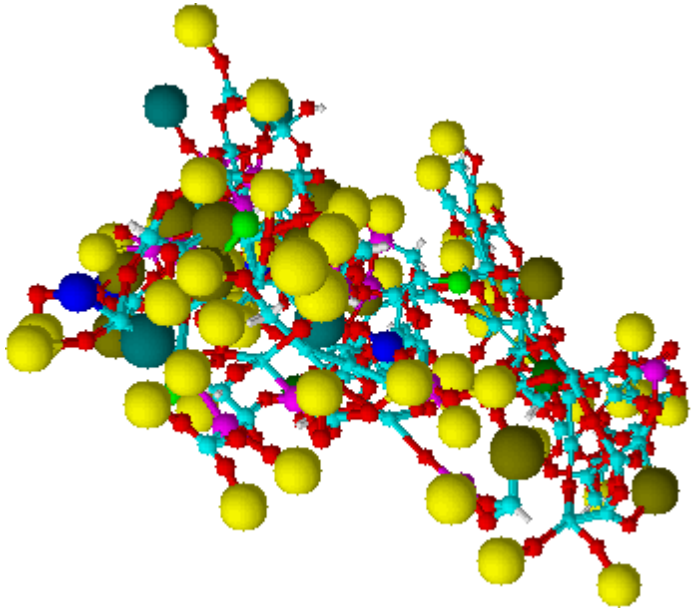
Possible modelisation of these particles (100 smaller than in reality)

Yellow = Na; Red = O; Magenta = Si; Blue = C; **Grey = Ca**; White = H.

Gelsemium 4CH



Gelsemium 200K



More compact model if Si/C decreases.

Conclusions SEM/EDX (1)

- For Cuprum 30C, the number of particles was comparable but only 1 µg/g was collected (40 times lower than in Gelsemium 30C).
- The presence of this material demonstrate that the used step by step process (dynamized or not) is not a simple dilution process.
- The lyophilized dry material obtained from Gelsemium 4C, 30C, 200K, dilution 10^{-60}, Cuprum 30C and Water 30C observed by SEM/EDS, allowing a detailed view of the obtained lyophilized dry material, produce remarkable images.

Conclusions SEM/EDX (2)

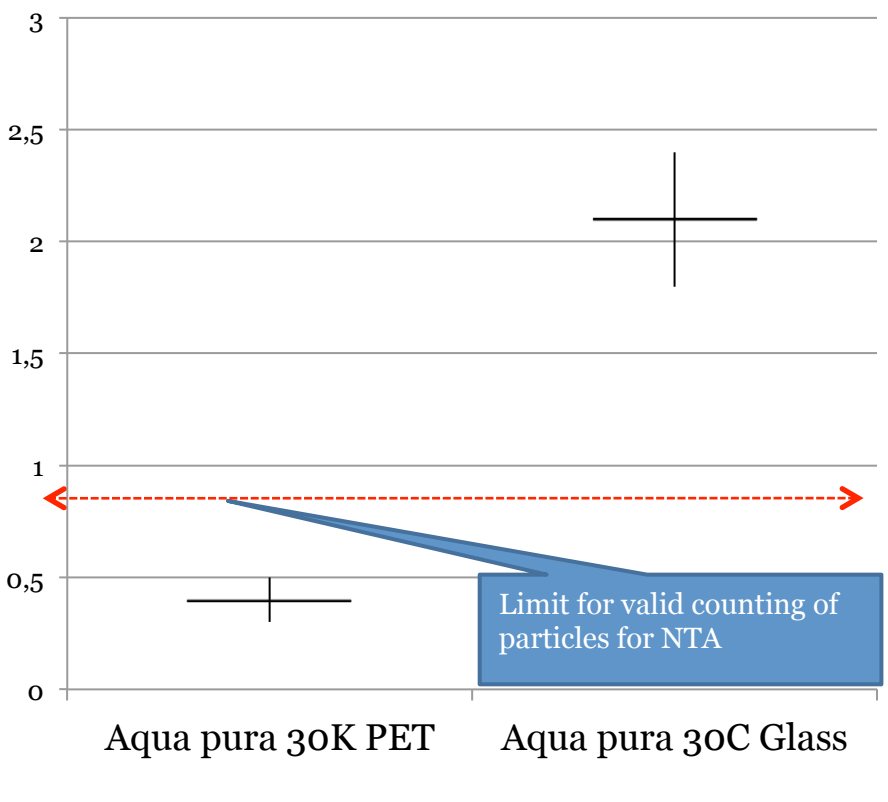
- If we compare the nature of the material, the diversity of shapes is the most complex in the 4C but can also be found in Gelsemium 30C and 200K. The shapes are also easily discriminated from simply diluted Gelsemium 10^{-60}, potentized coper or Kalium muriaticum 30C or potentized water 30C materials.
- The chemistry of the materials, determined by EDS, shows that this material is not composed of all original molecular compounds of the MT. Example : already in Gels 4C, no nitrogen found, meaning absence of specific Gelsemium alkaloids. There is a specific composition for each of the samples. The proportion of the different atoms results in a specific chemical profile.

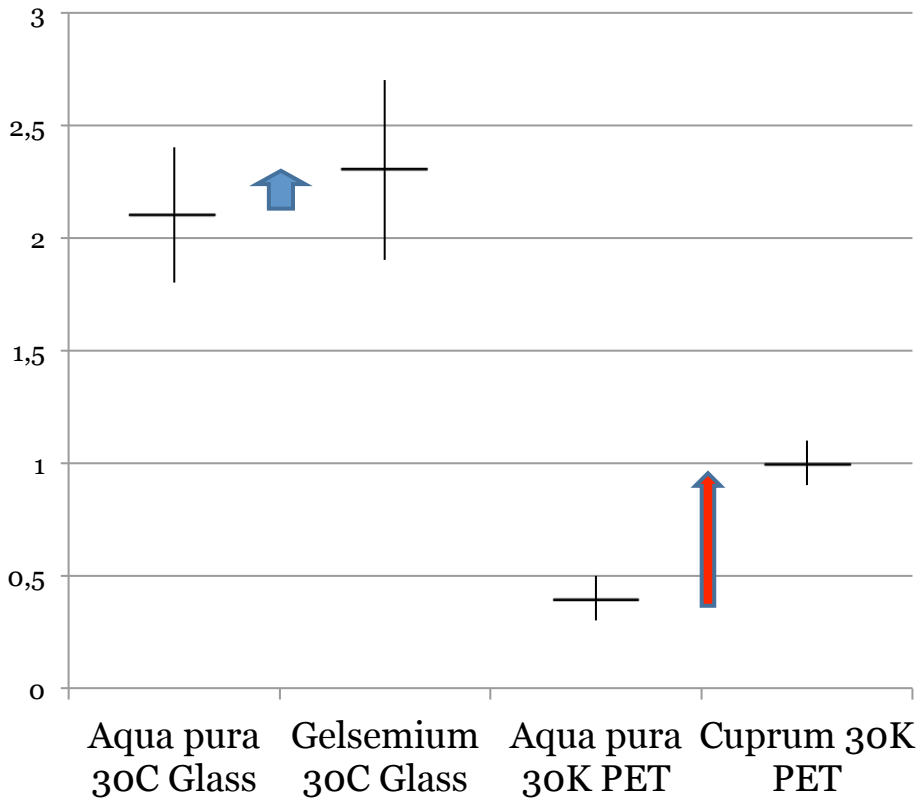
Conclusions SEM/EDX (3)

- The Molybdenum identified in Gelsemium 4C is an original component of the MT. This atom was not found in the other samples, excluding an involvement of glass containers. It is part of the xanthine oxidase, enzyme largely expressed in the roots of plants.
- Because of the absence of any particles in the used deionized pure water (NTA), the presence of these atoms can only be justified by an interaction between the original stock, the used glass containers and the deionized water.

Conclusions SEM/EDX (4)

- A simple dilution is not a potentization and a difference exists between the C, K potentization processes and controls.
- When using PET containers for the potentization of Aqua pura 30K no significant particles can be observed. Nevertheless, for the potentized Cuprum metallicum 30K also in PET container, particles are observed
- This fact confirms the role of the stock during the potentization process.





Established differences between measurements using glass or PET containers for the preparations.

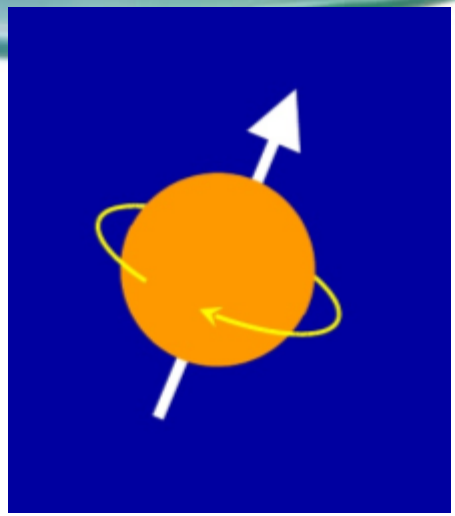
A comprehensive approach

✓ Nano particles search

✓ **Solvent (water) behaviour**

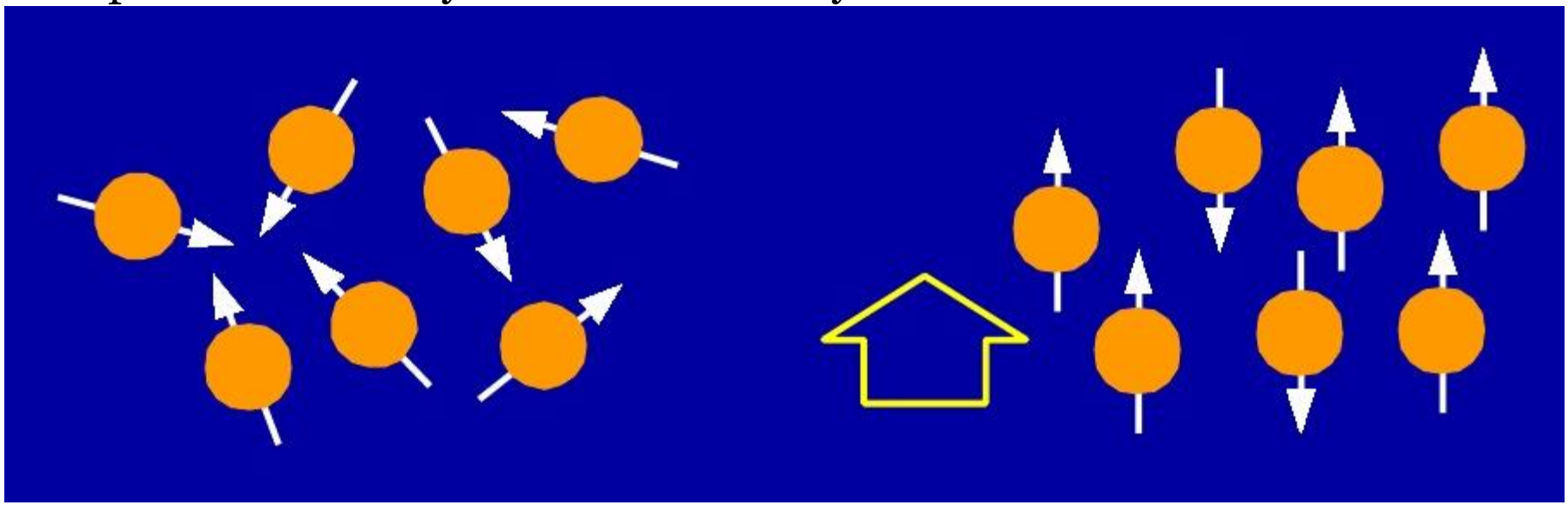
✓ Electrons behaviour

NMR

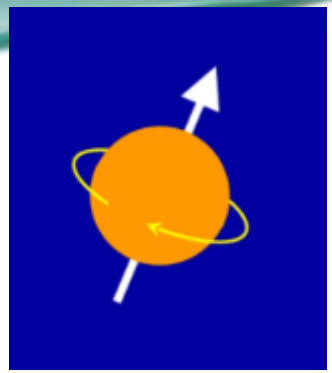


What are we measuring ?

- Certain atomic nuclei including 1H exhibit nuclear magnetic resonance. Nuclear “spins” are like magnetic dipoles.
- Spins are normally oriented randomly.

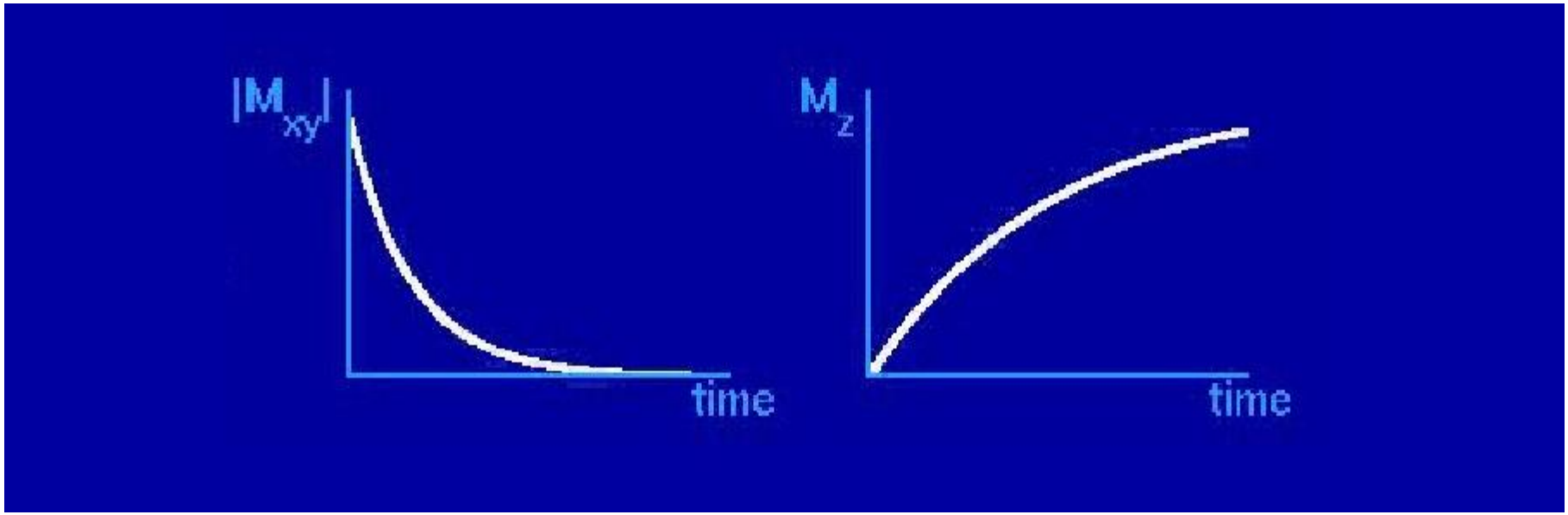


NMR

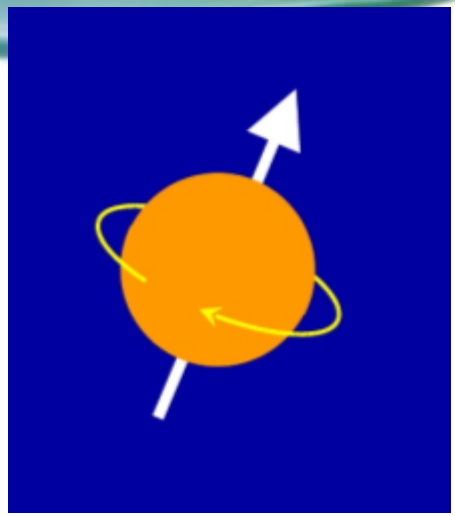


- Magnetization returns exponentially to equilibrium
- Longitudinal **recovery** time constant is T1 (spin-lattice relaxation time)
- Transverse **decay** time constant is T2 (spin-spin relaxation time)

Decay **Recovery**



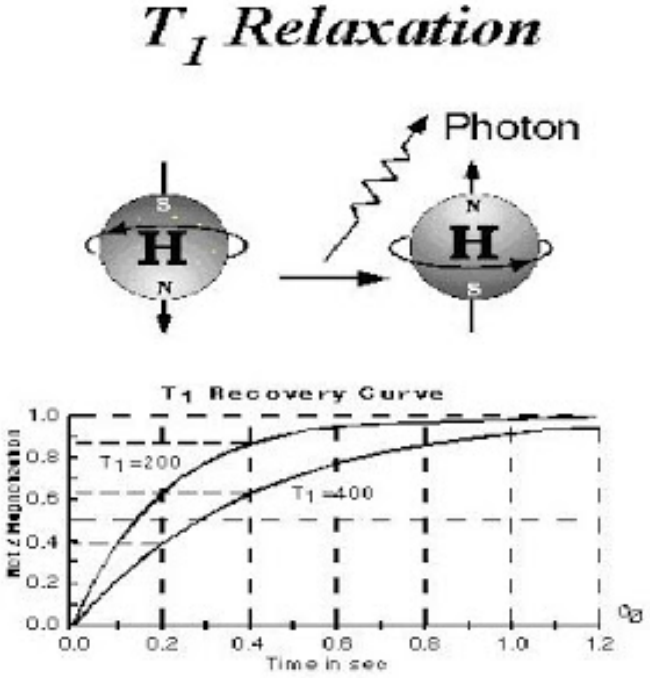
NMR

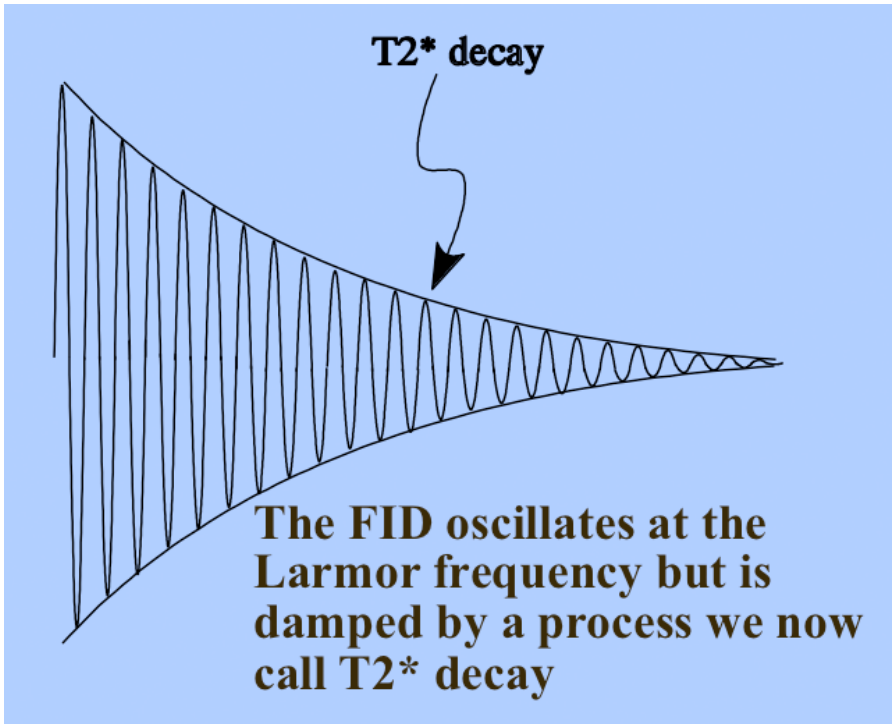


What are we measuring ?

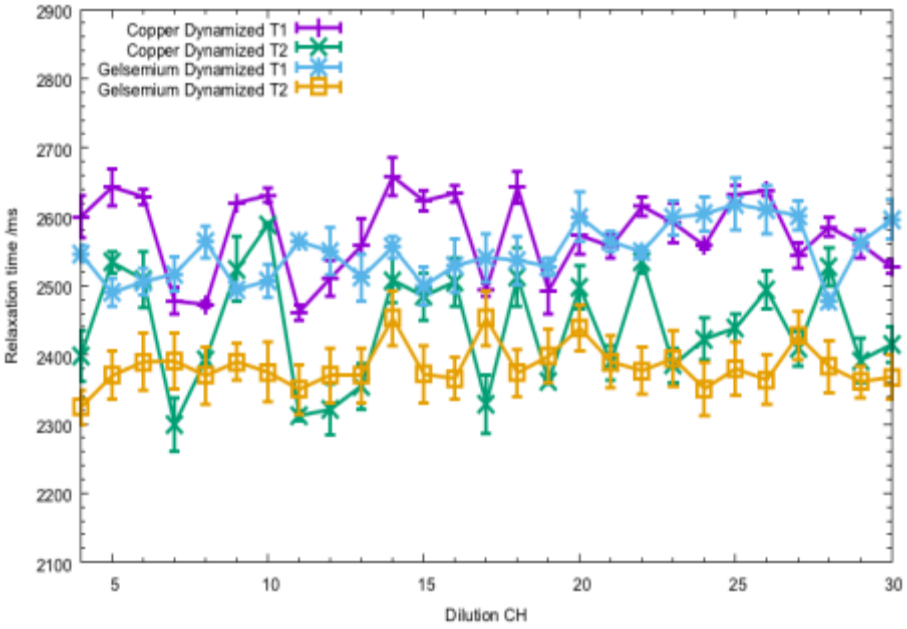
Measures “fixed” at 63% of final value.

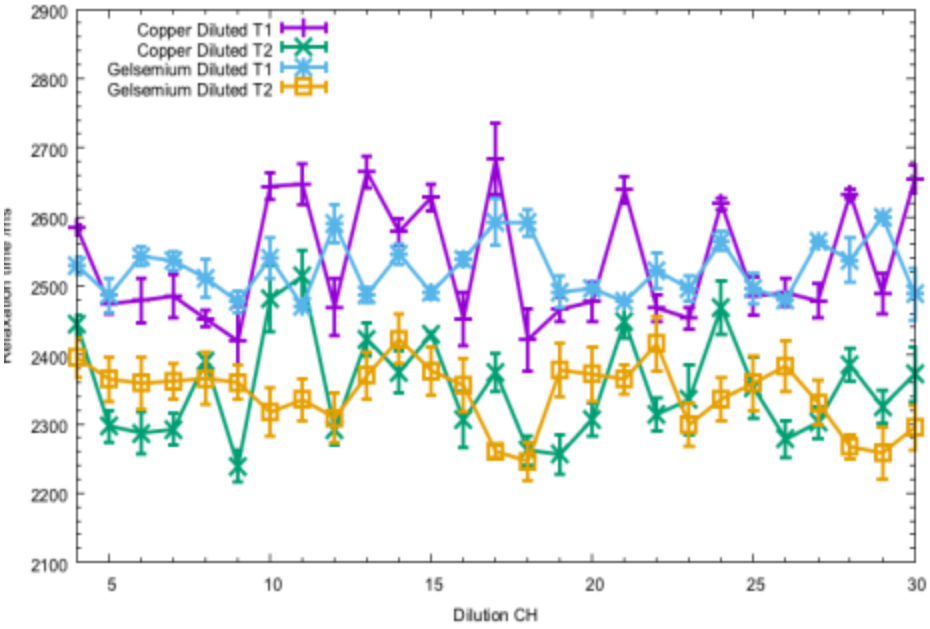
FID = free induction decay

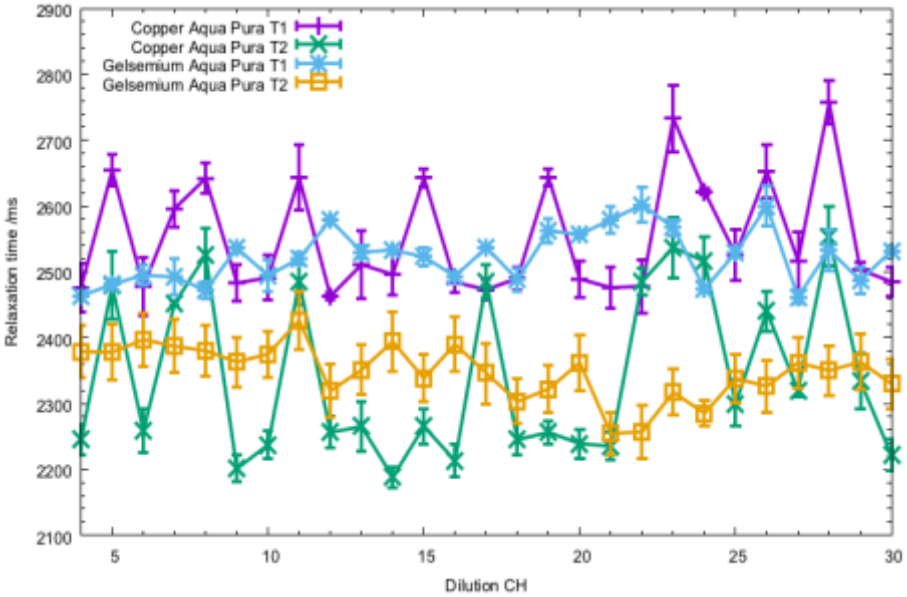


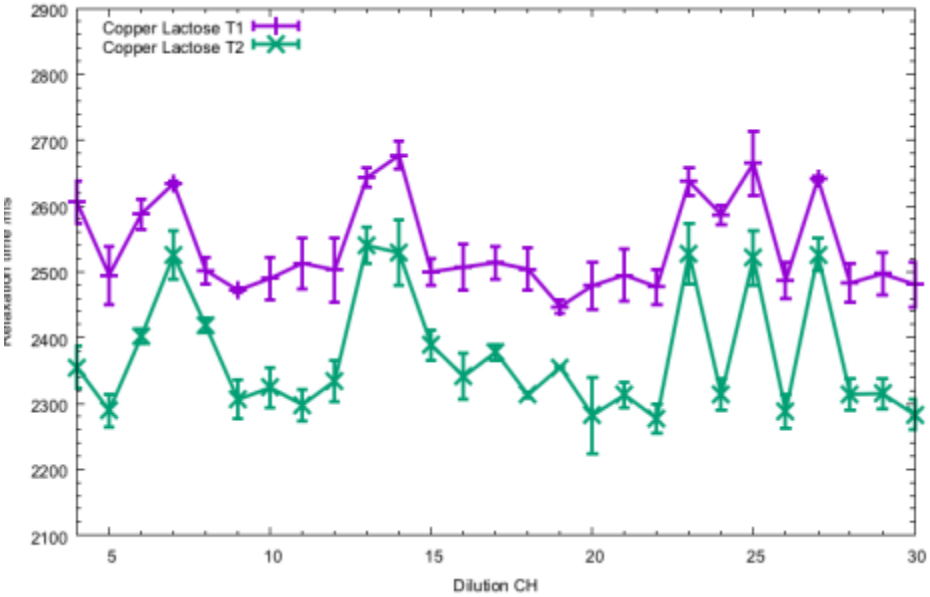


NMR


Copper Dynamized T1
Copper Dynamized T2
Gelsemium Dynamized T1
Gelsemium Dynamized T2
Relaxation time /ms
Dilution CH

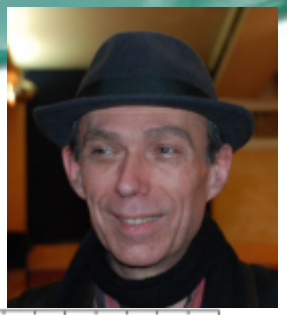

Copper Diluted T1
Copper Diluted T2
Gelsemium Diluted T1
Gelsemium Diluted T2
Dilution CH


Copper Aqua Pura T1
Copper Aqua Pura T2
Gelsemium Aqua Pura T1
Gelsemium Aqua Pura T2
Relaxation time /ms
Dilution CH

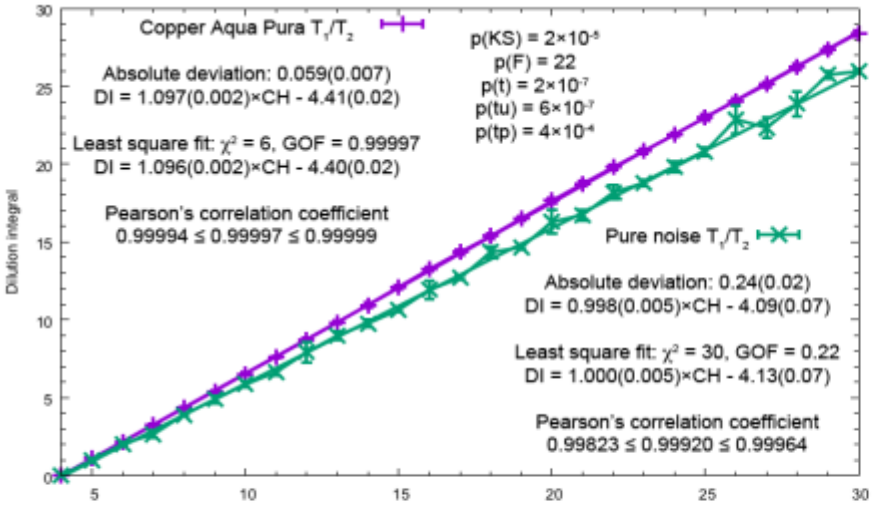

Copper Lactose T1
Copper Lactose T2
Dilution CH

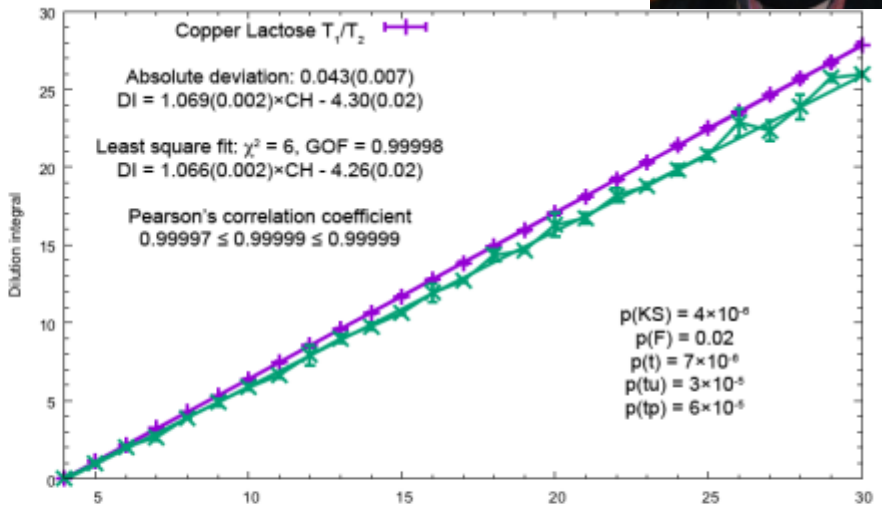
NMR

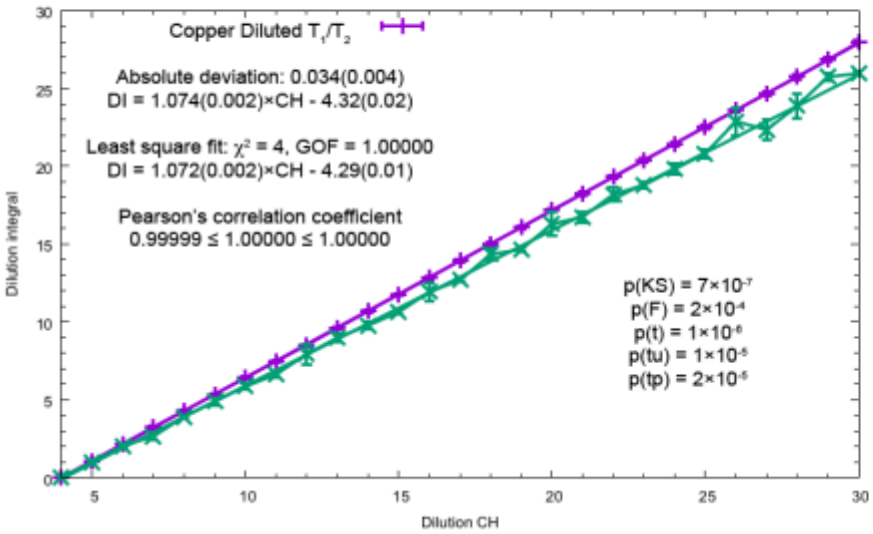
After these measurements a question arised : **« Are these values specific and as such allowing to discriminate the medicines between each other or are they aleatory values? »**. To answer this question, statistical analyses are needed.

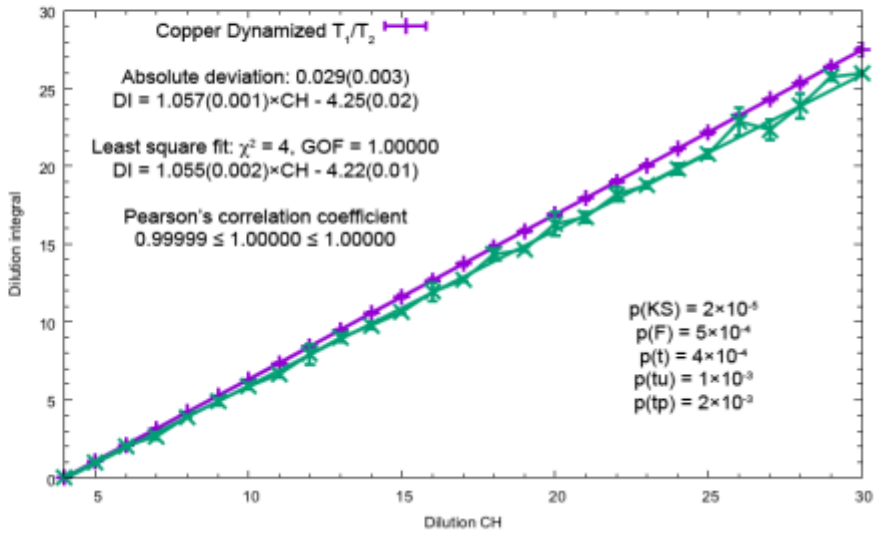


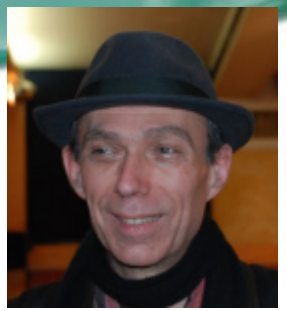
NMR


Copper Aqua Pura T_1/T_2
Absolute deviation: 0.059(0.007)
DI = 1.097(0.002)×CH - 4.41(0.02)
Least square fit: χ^2 = 6, GOF = 0.99997
DI = 1.096(0.002)×CH - 4.40(0.02)
Pearson's correlation coefficient
0.99994 ≤ 0.99997 ≤ 0.99999
p(KS) = 2×10⁻⁵
p(F) = 22
p(t) = 2×10⁻⁷
p(tu) = 6×10⁻⁷
p(tp) = 4×10⁻⁴
Pure noise T_1/T_2
Absolute deviation: 0.24(0.02)
DI = 0.998(0.005)×CH - 4.09(0.07)
Least square fit: χ^2 = 30, GOF = 0.22
DI = 1.000(0.005)×CH - 4.13(0.07)
Pearson's correlation coefficient
0.99823 ≤ 0.99920 ≤ 0.99964
Dilution integral

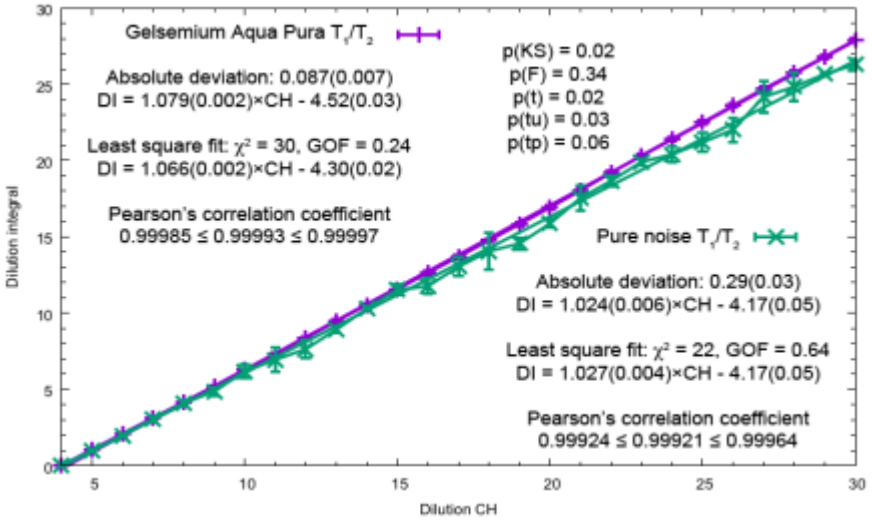

Copper Lactose T_1/T_2
Absolute deviation: 0.043(0.007)
DI = 1.069(0.002)×CH - 4.30(0.02)
Least square fit: χ^2 = 6, GOF = 0.99998
DI = 1.066(0.002)×CH - 4.26(0.02)
Pearson's correlation coefficient
0.99997 ≤ 0.99999 ≤ 0.99999
p(KS) = 4×10⁻⁶
p(F) = 0.02
p(t) = 7×10⁻⁶
p(tu) = 3×10⁻⁵
p(tp) = 6×10⁻⁶
Dilution integral

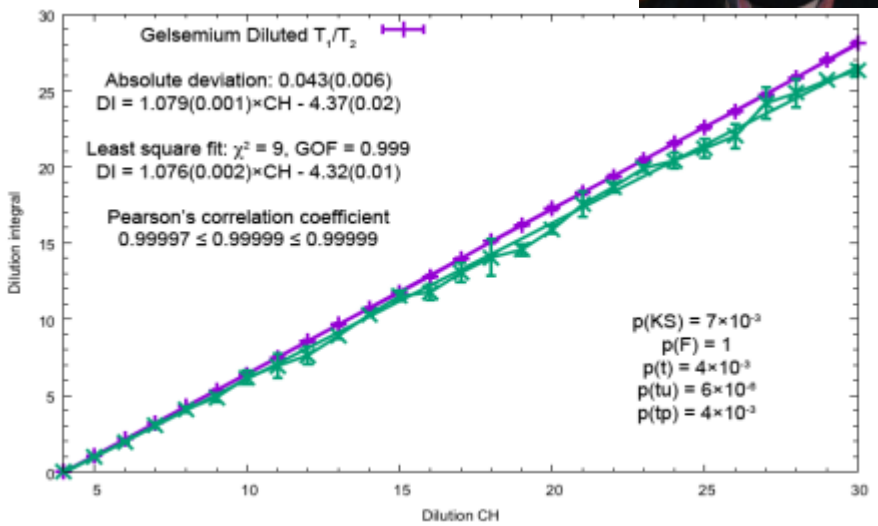

Copper Diluted T_1/T_2
Absolute deviation: 0.034(0.004)
DI = 1.074(0.002)×CH - 4.32(0.02)
Least square fit: χ^2 = 4, GOF = 1.00000
DI = 1.072(0.002)×CH - 4.29(0.01)
Pearson's correlation coefficient
0.99999 ≤ 1.00000 ≤ 1.00000
p(KS) = 7×10⁻⁷
p(F) = 2×10⁻⁴
p(t) = 1×10⁻⁶
p(tu) = 1×10⁻⁵
p(tp) = 2×10⁻⁶
Dilution integral
Dilution CH

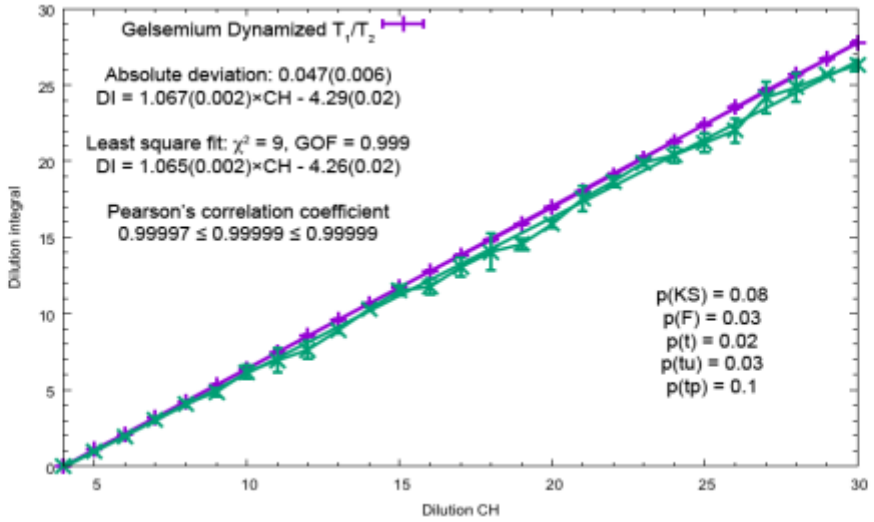

Copper Dynamized T_1/T_2
Absolute deviation: 0.029(0.003)
DI = 1.057(0.001)×CH - 4.25(0.02)
Least square fit: χ^2 = 4, GOF = 1.00000
DI = 1.055(0.002)×CH - 4.22(0.01)
Pearson's correlation coefficient
0.99999 ≤ 1.00000 ≤ 1.00000
p(KS) = 2×10⁻⁵
p(F) = 5×10⁻⁴
p(t) = 4×10⁻⁴
p(tu) = 1×10⁻³
p(tp) = 2×10⁻³
Dilution integral
Dilution CH

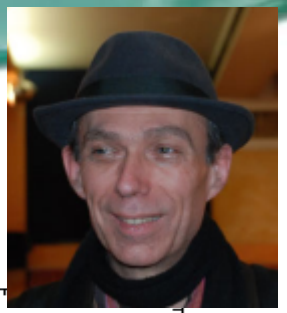


NMR

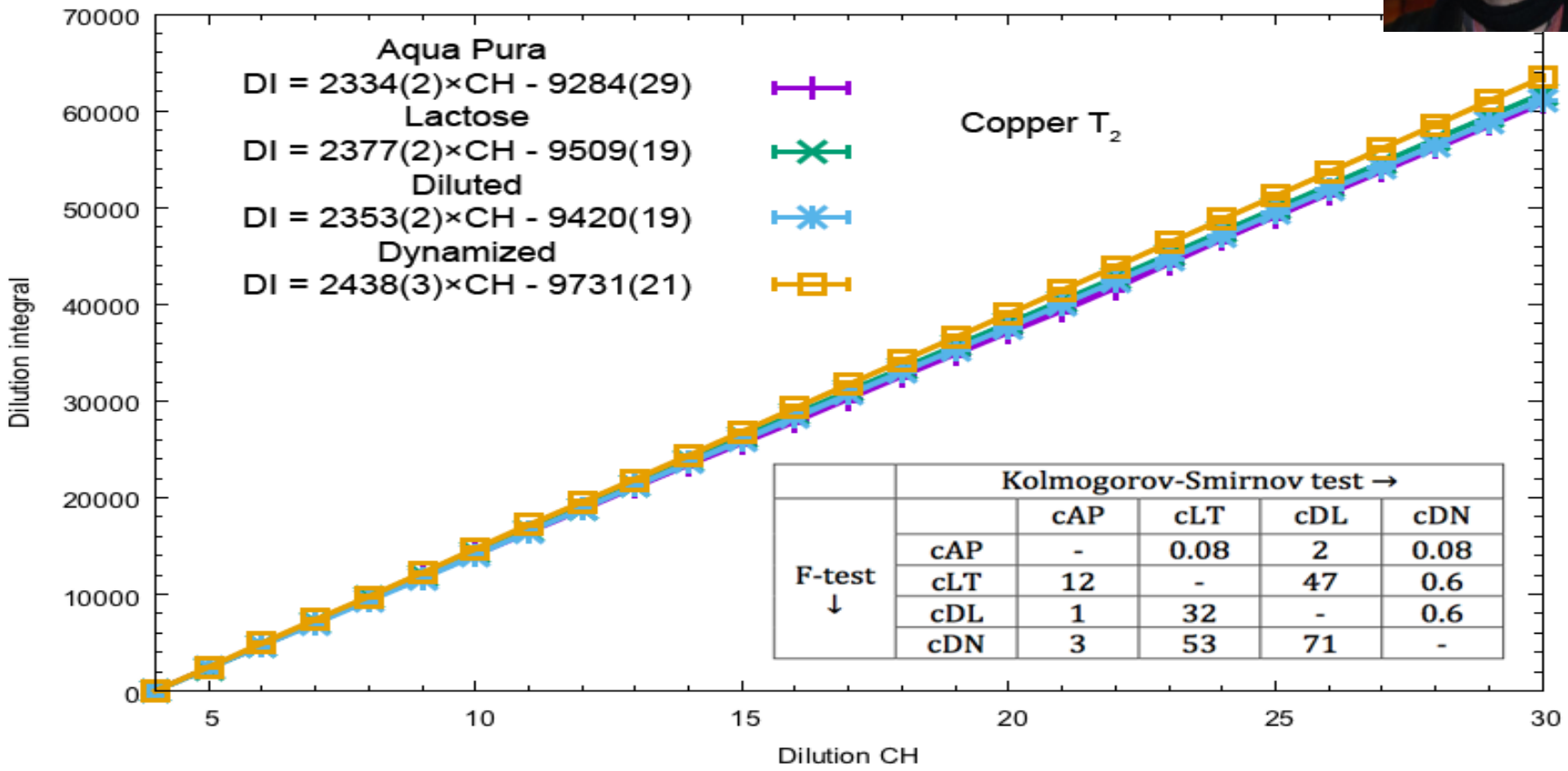

Gelsemium Aqua Pura T_1/T_2
Absolute deviation: 0.087(0.007)
DI = 1.079(0.002)×CH - 4.52(0.03)
Least square fit: χ^2 = 30, GOF = 0.24
DI = 1.066(0.002)×CH - 4.30(0.02)
Pearson's correlation coefficient
0.99985 ≤ 0.99993 ≤ 0.99997
p(KS) = 0.02
p(F) = 0.34
p(t) = 0.02
p(tu) = 0.03
p(tp) = 0.06
Pure noise T_1/T_2
Absolute deviation: 0.29(0.03)
DI = 1.024(0.006)×CH - 4.17(0.05)
Least square fit: χ^2 = 22, GOF = 0.64
DI = 1.027(0.004)×CH - 4.17(0.05)
Pearson's correlation coefficient
0.99924 ≤ 0.99921 ≤ 0.99964
Dilution integral
Dilution CH


Gelsemium Diluted T_1/T_2
Absolute deviation: 0.043(0.006)
DI = 1.079(0.001)×CH - 4.37(0.02)
Least square fit: χ^2 = 9, GOF = 0.999
DI = 1.076(0.002)×CH - 4.32(0.01)
Pearson's correlation coefficient
0.99997 ≤ 0.99999 ≤ 0.99999
p(KS) = 7×10⁻³
p(F) = 1
p(t) = 4×10⁻³
p(tu) = 6×10⁻⁶
p(tp) = 4×10⁻³
Dilution integral
Dilution CH


Gelsemium Dynamized T_1/T_2
Absolute deviation: 0.047(0.006)
DI = 1.067(0.002)×CH - 4.29(0.02)
Least square fit: χ^2 = 9, GOF = 0.999
DI = 1.065(0.002)×CH - 4.26(0.02)
Pearson's correlation coefficient
0.99997 ≤ 0.99999 ≤ 0.99999
p(KS) = 0.08
p(F) = 0.03
p(t) = 0.02
p(tu) = 0.03
p(tp) = 0.1
Dilution integral
Dilution CH



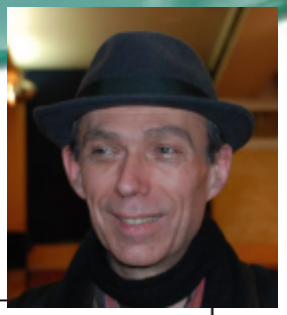
NMR



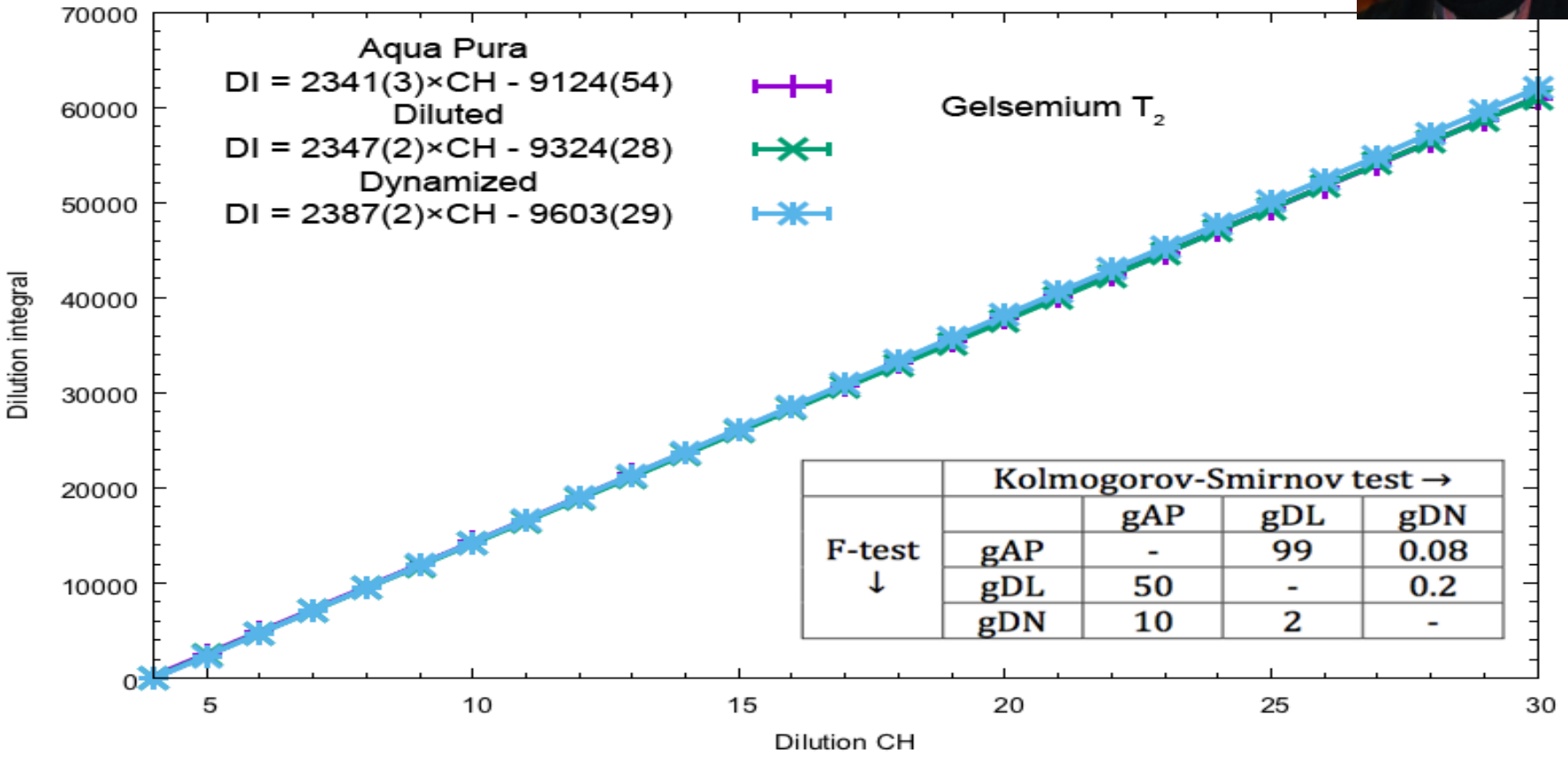
	Kolmogorov-Smirnov test →			
F-test ↓	cAP	cLT	cDL	cDN
cAP	-	0.08	2	0.08
cLT	12	-	47	0.6
cDL	1	32	-	0.6
cDN	3	53	71	-

Student	t-test →			
tu-test ↓	cAP	cLT	cDL	cDN
cAP	-	32	68	0.2
cLT	32	-	42	0.7
cDL	68	42	-	0.02
cDN	0.2	0.7	0.02	-

Student	tp-test →			
tp-test ↓	cAP	cLT	cDL	cDN
cAP	-	32	66	0.5
cLT	32	-	42	2
cDL	66	42	-	0.1
cDN	0.5	2	0.1	-



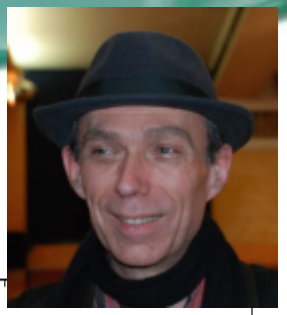
NMR



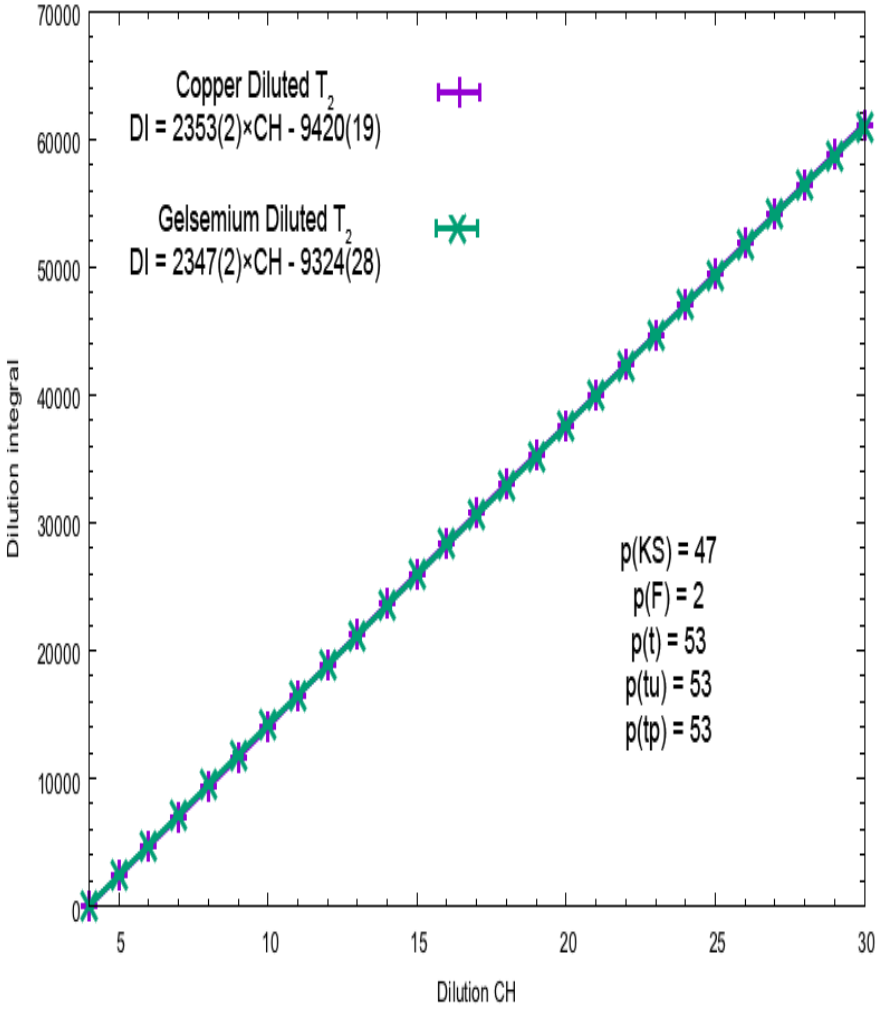
	Kolmogorov-Smirnov test →			
F-test ↓		gAP	gDL	gDN
	gAP	-	99	0.08
	gDL	50	-	0.2
	gDN	10	2	-

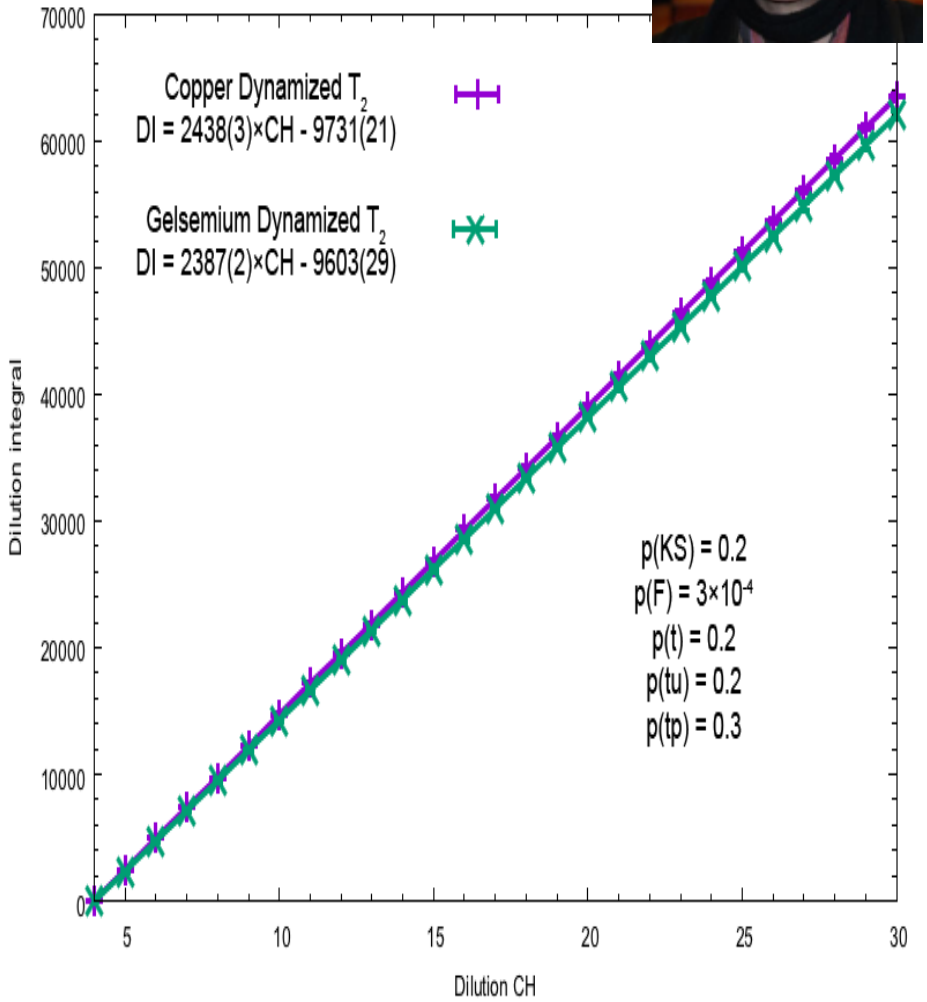
Student	t-test →			
tu-test ↓		gAP	gDL	gDN
	gAP	-	69	0.07
	gDL	69	-	0.04
	gDN	0.07	0.04	-

Student	tp- test →			
tp-test ↓		gAP	gDL	gDN
	gAP	-	68	0.1
	gDL	68	-	0.1
	gDN	0.1	0.1	-

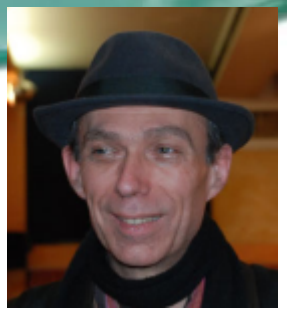


NMR


Copper Diluted T_2
DI = 2353(2)×CH - 9420(19)
Gelsemium Diluted T_2
DI = 2347(2)×CH - 9324(28)
p(KS) = 47
p(F) = 2
p(t) = 53
p(tu) = 53
p(tp) = 53
Dilution integral
Dilution CH
0
10000
20000
30000
40000
50000
60000
70000
5
10
15
20
25
30

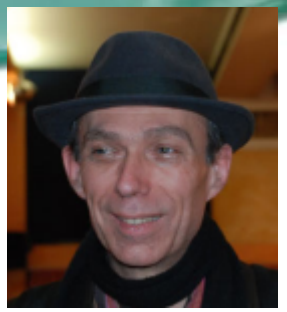

Copper Dynamized T_2
DI = 2438(3)×CH - 9731(21)
Gelsemium Dynamized T_2
DI = 2387(2)×CH - 9603(29)
p(KS) = 0.2
p(F) = 3×10^{-4}
p(t) = 0.2
p(tu) = 0.2
p(tp) = 0.3
Dilution integral
Dilution CH
0
10000
20000
30000
40000
50000
60000
70000
5
10
15
20
25
30

NMR Conclusions (1)



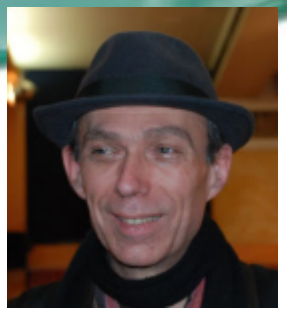
- NMR proton relaxation is sensitive to the dynamics of the water molecule H_2O (solvent), through the interaction of the spin of the proton (^1H) with external magnetic and electromagnetic fields.
- This study confirms that it is possible to monitor dilution and potentization processes through measurements of ^1H spin-lattice T_1 and spin-spin T_2 relaxation times.
- In order to interpret the recorded fluctuations, experimental data have been linearized (dilution integral or DI). It was possible to show that such fluctuations cannot be attributed to random noise and/or experimental errors, evidencing a kind of memory effect that can be quantified.
- **All potentized samples show very good discrimination (at least nine-sigma level) against aqua pura, lactose or simple dilution.**

NMR Conclusions (2)



- Our experiments points to a considerable **slowing down of molecular movements** around water molecules up to a distance of 3.7 Å, values. It was also possible to rule out other possible mechanisms of relaxation (diffusive motion, ^{17}O-^{1}H relaxation or coupling with the electronic spin, S = 1, of dissolved dioxygen molecules).
- This is clear evidence that homeopathic solutions **cannot be considered as pure water** as commonly assumed. Instead, we have evidence a clear memory effect upon dilution/potentization of a substance (water, lactose, copper, gelsemium) reflected by different rotational correlation times and average H…H distances.
- A possible explanation for such a memory effect may lie in the formation of mesoscopic **water structures around nanoparticles and/or nanobubbles** mediated by zero-point fluctuations of the vacuum electromagnetic field as suggested by quantum field theories.

NMR Conclusions (3)



- It follows that the existence of a putative of **Avogadro's wall for homeopathically-prepared medicines is not supported by our data**. It should be rather considered that all dilutions may have a specific material configuration ruled not only by the potentized substance but also by the chemical nature of the containers, the chemical nature of dissolved gases and even by the electromagnetic environment.
- This sensitivity of homeopathically-prepared medicines towards electromagnetic fields may be amplified by the highly non-linear processing routinely applied in the preparation of homeopathic medicines.
- Future work is obviously needed in such directions, and we think that time is now ripe for a **complete demystification of the principles involved in the preparation of homeopathic remedies.**

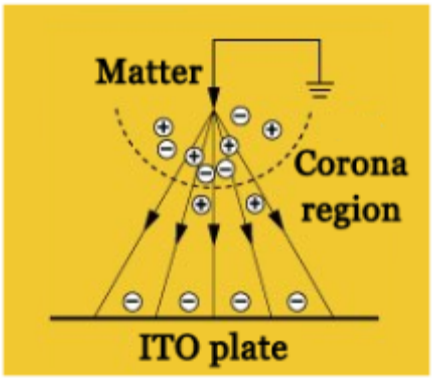
A comprehensive approach

✓ Nano particles search

✓ Solvent (water) behaviour

✓ **Electrons behaviour**

EPA



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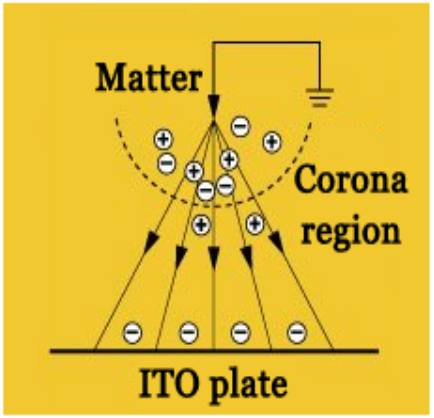
An electric field successively mobilizes electric charges at the surface and in the thickness of the object to be analyzed causing ionization of the gaseous environment around the studied body (plasma gas).
This ionization creates an electronic avalanche which, by splitting the gas molecules, release UV photons that are recorded by the camera.
All these phenomena don't appear simultaneously, but one after the other, depending on the pulse generator. Images acquisition provides an idea of the statistical distribution of light emission during exposure time. Numerous experiments have shown that charges are mainly distributed in two different ways:
– The positive pulses of the generator, leading to filamentary structures called "streamers".
– The negative pulses creating rounded and globular forms called "coronae".
These acquisitions allow appreciating the growing richness of the image depending as the complexity of the analyzed object increase.

EPA



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It is worth noticing that many environmental physical factors are to be taken into account in conducting electrophotonic experiments. Among them, we may cite: ambient atmosphere (gas), moisture (crucial factor for ionization), and dust (highly sensitive to electric fields).

Date	11/04/2016	12/04/2016	13/04/2016	14/04/2016	15/04/2016
T /°C	22	20-23	21-23	21-23	21-24
R.H. %	44-48	36-44	39-46	39-42	42-46

EPA Pills

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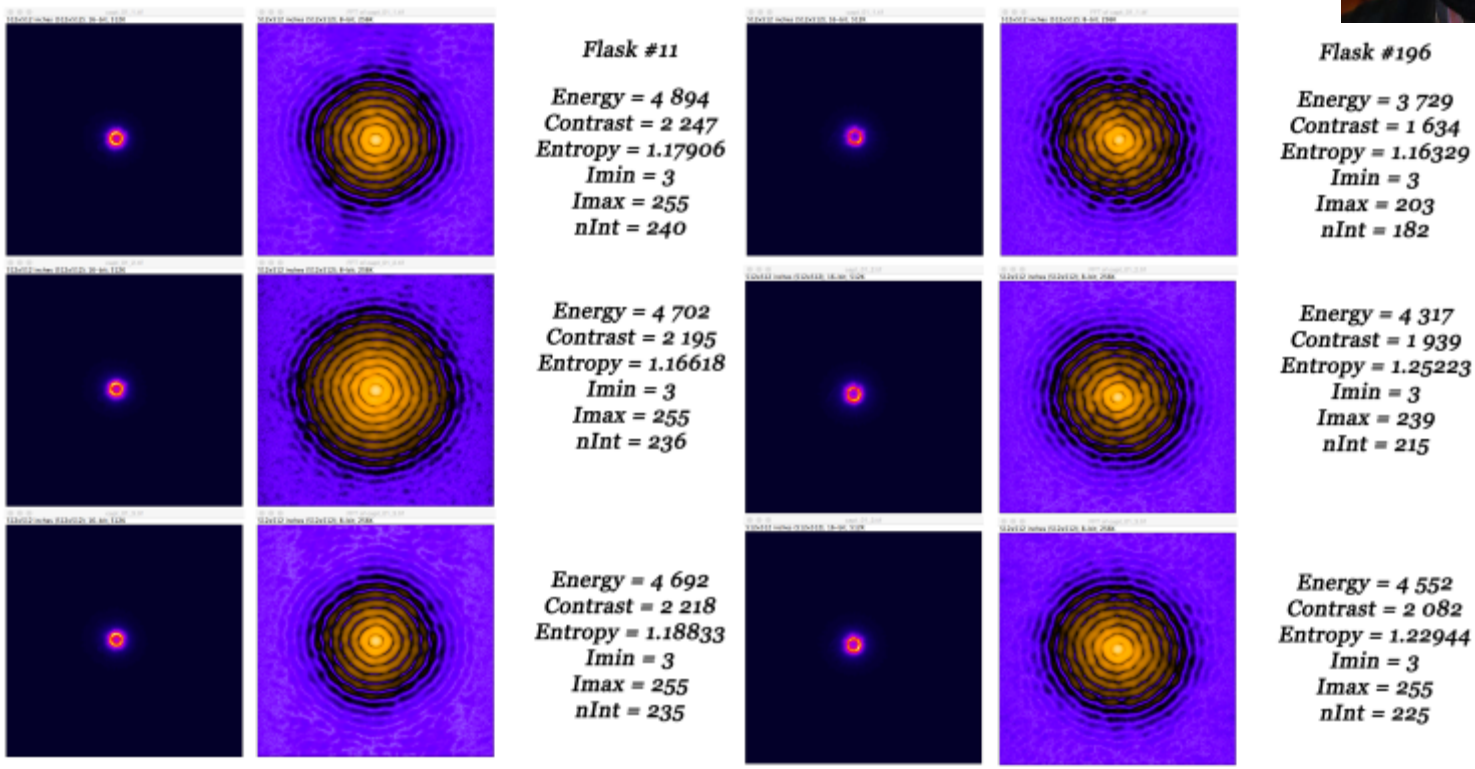
Non Impregnated ***Impregnated pure solvent***



Electrophotonic images with their fast Fourier transform. Impregnated pills seems to be characterized by much higher standard deviations than non-impregnated pills. Energies and contrasts are found to be different at a one sigma level of significance, while entropies cannot be differentiated.

EPA Pills CUPRUM

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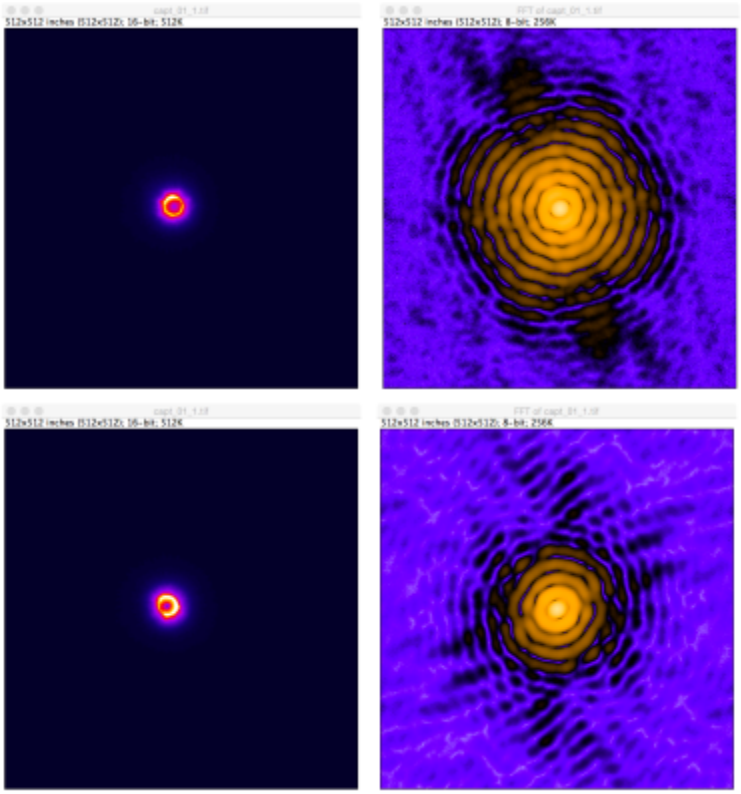

Flask 126 (5CH)

Energy = 5 054
Contrast = 1 943
Entropy = 0.983
Imin = 3
Imax = 255
nInt = 225

Flask 69 (5CH)
1987

Energy = 6042
Contrast = 2 446
Entropy = 1.147
Imin = 1
Imax = 255
nInt = 247

The top one refer to the preparation made in 2016 for this study, while the second one corresponds to a preparation made 30 years ago by the same pharmacy. It is observed that aging does not alter the photonic energy or the contrast energy that appear to be significantly higher than the reference. It also appears that the aged sample seems to be more emissive and have a higher entropy than the fresh one. This tends to prove that the quality of an homeopathic preparation may be quite stable for a long period of time. The higher entropy of the aged sample means that the information content seems to have increased over time, while the FFT evidences a smaller frequency spreading.

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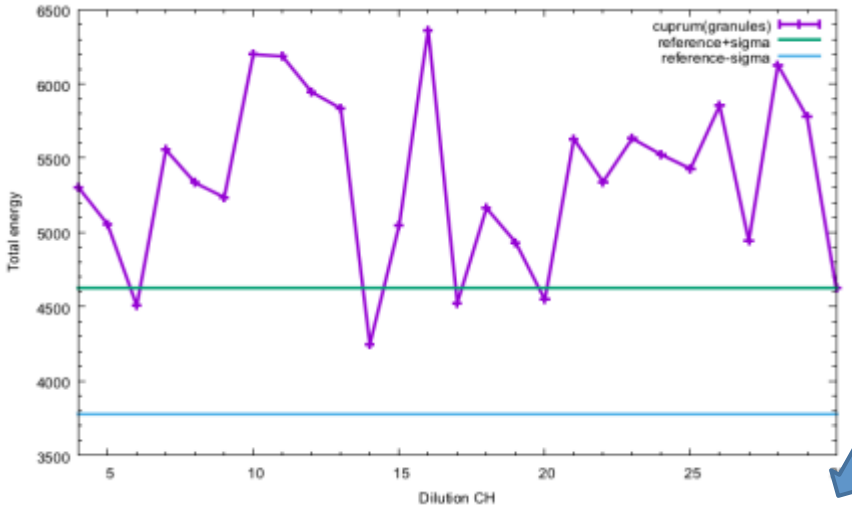
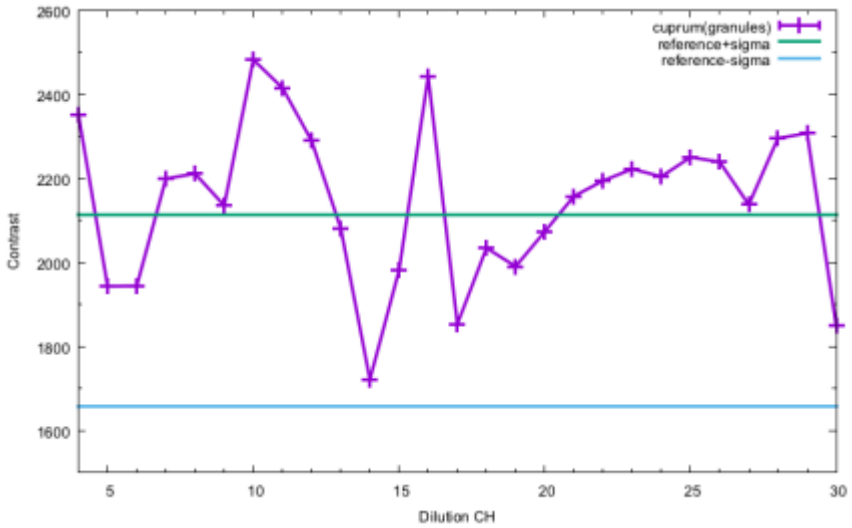


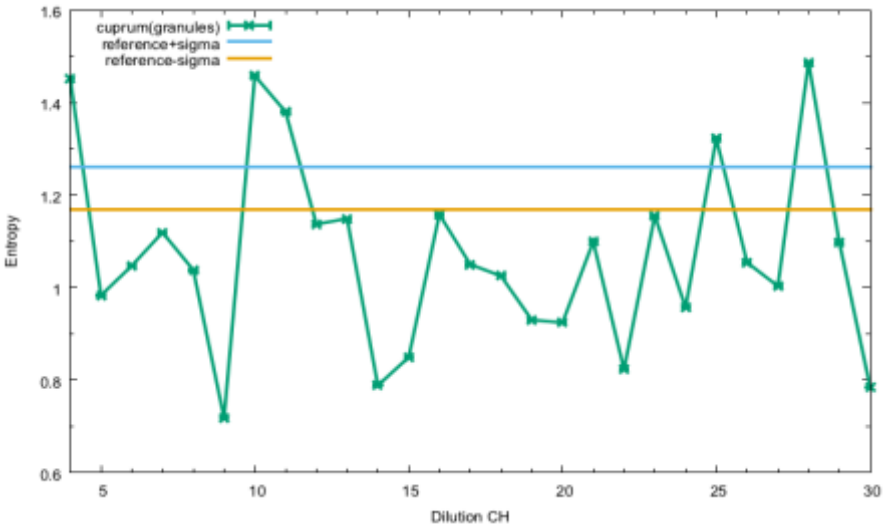
Potentized CUPRUM impregnated pills

Energy average energy value is found to be statistically different from the granules impregnated with the pure solvent

Contrast average contrast value is found to be not statistically different from the reference

Entropy average entropy value is found to be not statistically different from the reference





EPA Pills CUPRUM

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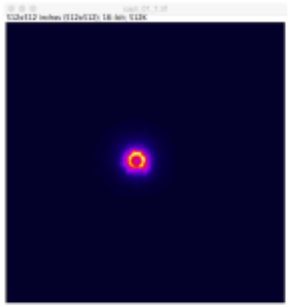
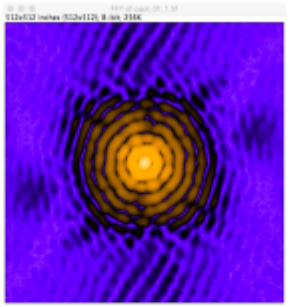
Impregnated simple dilution Cuprum

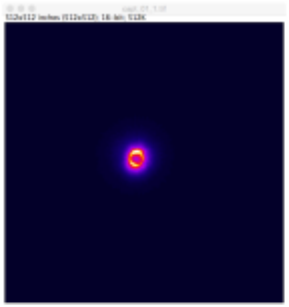
Impregnated potentized Cuprum

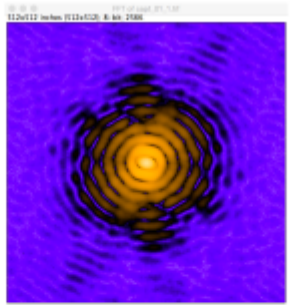




Flacon 255 (Dil 30)

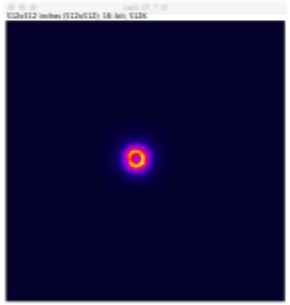
Energy = 5 332
Contrast = 2 300
Entropy = 1.18865
Imin = 3
Imax = 255
nInt = 241

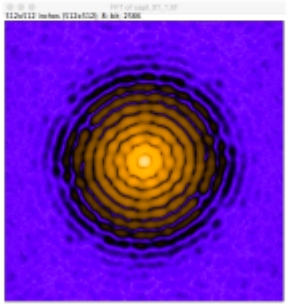




Flacon 174 (15CH)

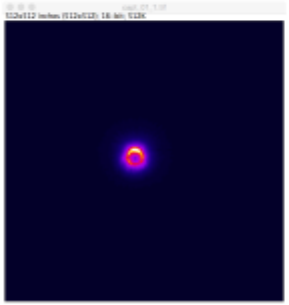
Energy = 5 044
Contrast = 1 981
Entropy= 0.848703
Imin = 3
Imax = 255
nInt = 232

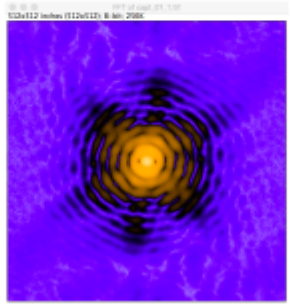




Flacon 256 (Dil 60)

Energy = 5 422
Contrast = 2 168
Entropy = 1.19964
Imin = 3
Imax = 255
nInt = 243



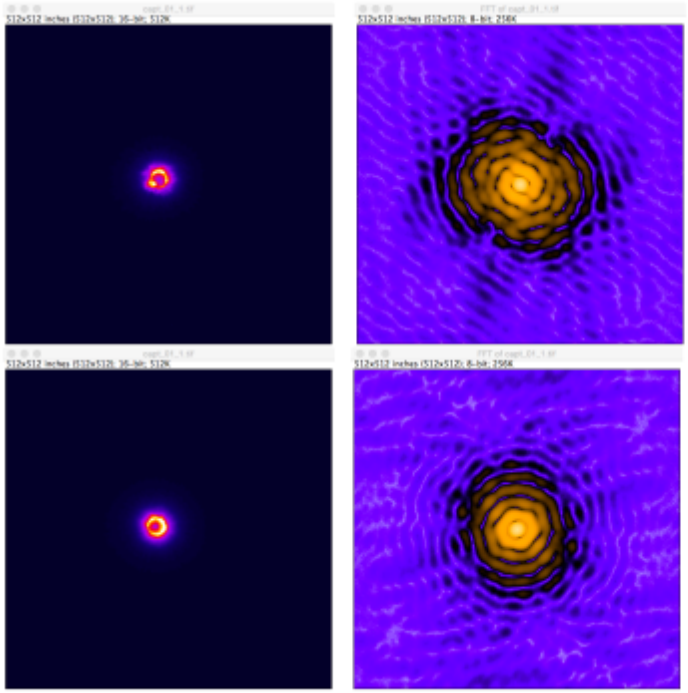


Flacon 226 (30CH)

Energy = 4 624
Contrast = 1 849
Entropy = 0.785113
Imin = 3
Imax = 255
nInt = 223

Electrophotonic images with their fast Fourier transform. One observes a systematic reduction in energy, contrast and entropy for the dynamized samples relative to the diluted ones.

EPA Pills CUPRUM
Korsakov preparations



Flask 185 (200K)

Energy = 5 044
Contrast = 2 208
Entropy = 1.05433
Imin = 3
Imax = 255
nInt = 227

Flask 93 (200K)
1986

Energy = 5 929
Contrast = 2 378
Entropy = 1.32028
Imin = 3
Imax = 255
nInt = 240

The top one refer to the preparation made in 2016 for this study, while the second one corresponds to a preparation made 30 years ago by the same pharmacy. It is again observed that aging does not alter the photonic energy or the contrast energy that appear to be significantly higher than the reference and quite similar to the one observed for a 5CH preparation. It again appears that the aged sample seems to be more emissive and have a higher entropy than the fresh one. This tends to prove that the quality of an homeopathic preparation using the Korsakov method may also be quite stable for a long period of time. As with the Hahnemann method, he higher entropy of the aged sample means that the information content seems to have increased over time, while the FFT evidences a smaller frequency spreading.

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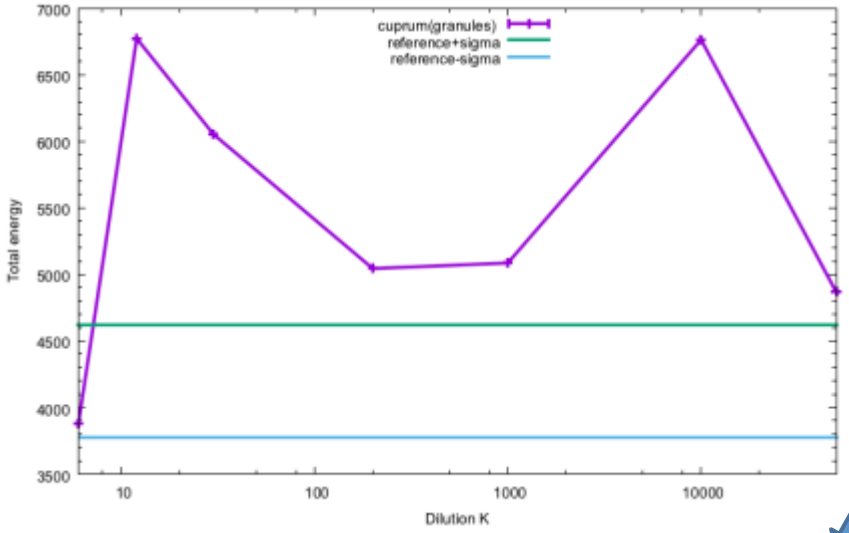
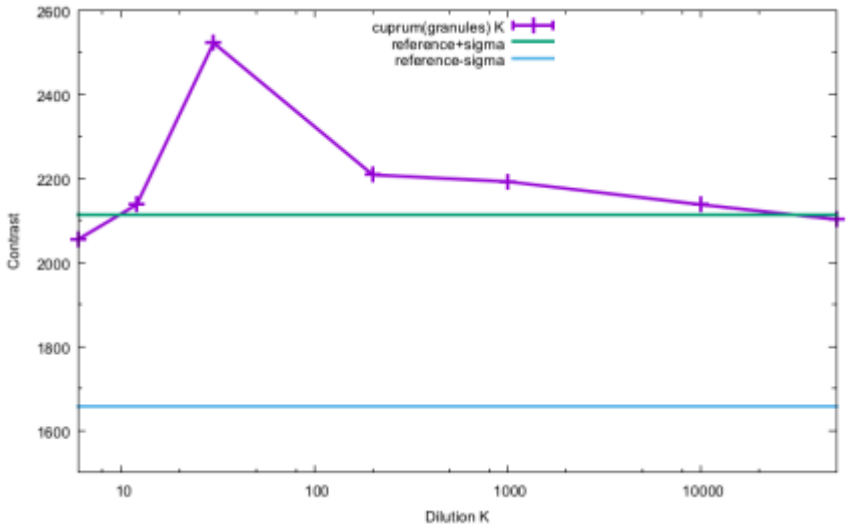


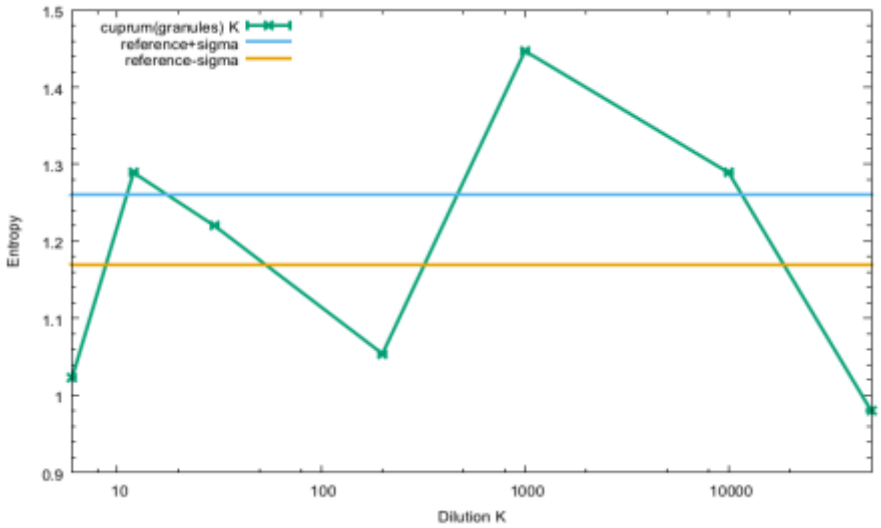
K Potentized CUPRUM impreg. pills

Energy average energy value is found to be not statistically different from the granules impregnated with the pure solvent

Contrast average contrast value is found to be not statistically different from the reference

Entropy average entropy value is found to be statistically different from the reference





EPA Pills GELSEMIUM

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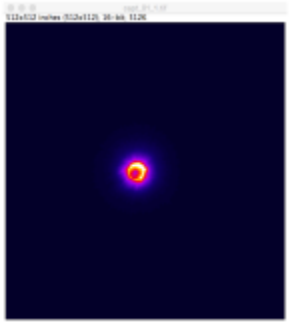
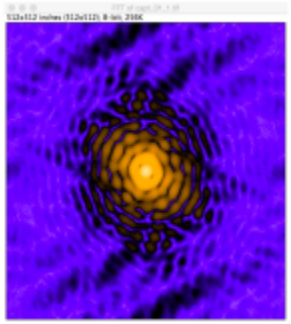
Impregnated simple dilution Gelsemium

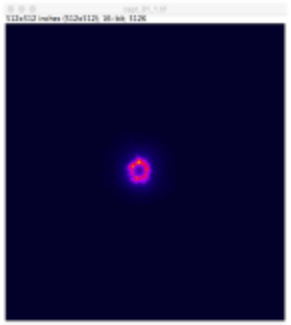
Impregnated potentized Gelsemium

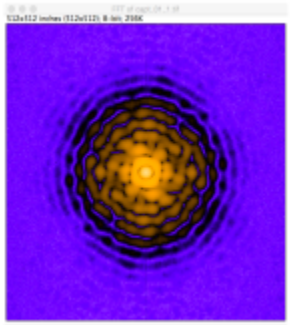




Flask 258 (Dil 30)

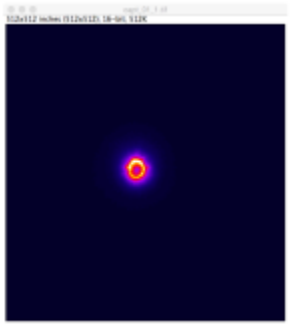
Energy = 6 138
Contrast = 2 248
Entropy = 1.26628
Imin = 3
Imax = 255
nInt = 235

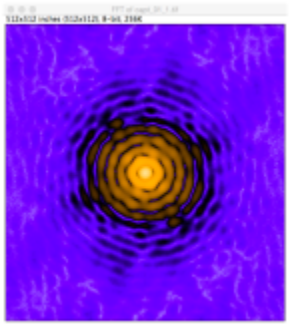




Flask 160 (15 CH)

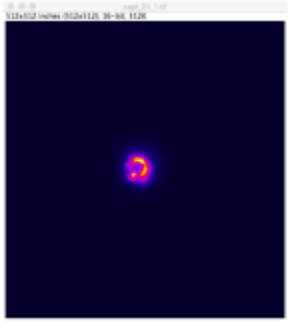
Energy = 3 363
Contrast = 1 299
Entropy = 0.904248
Imin = 3
Imax = 189
nInt = 256

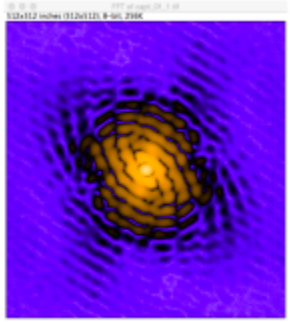




Flask 259 (Dil 60)

Energy = 5 732
Contrast = 2 273
Entropy = 1.15629
Imin = 3
Imax = 255
nInt = 239





Flask 177 (30 CH)

Energy = 4 555
Contrast = 1 982
Entropy = 0.95306
Imin = 3
Imax = 255
nInt = 227

Electrophotonic images with their fast Fourier transform. One observes a systematic reduction in energy, contrast and entropy for the dynamized samples relative to the diluted ones.

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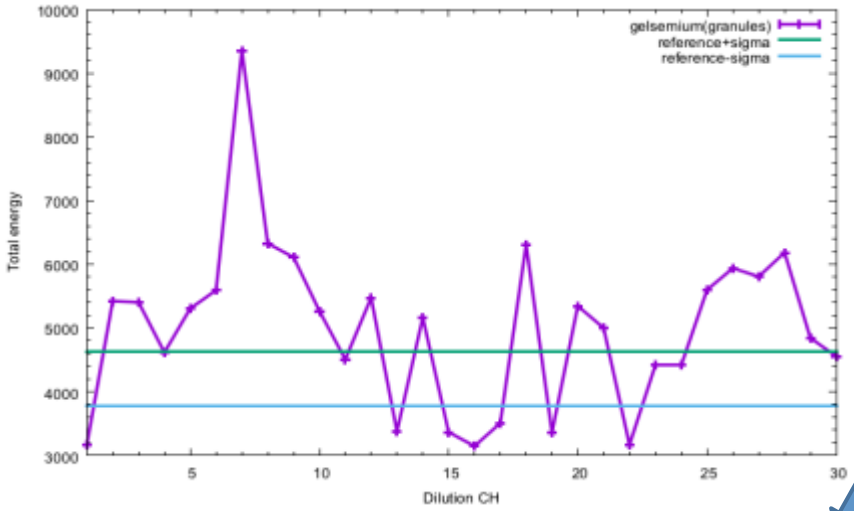
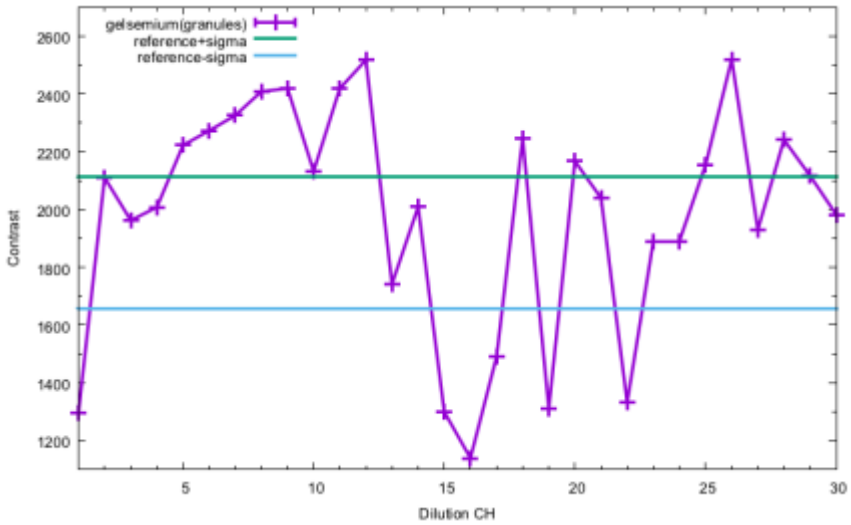


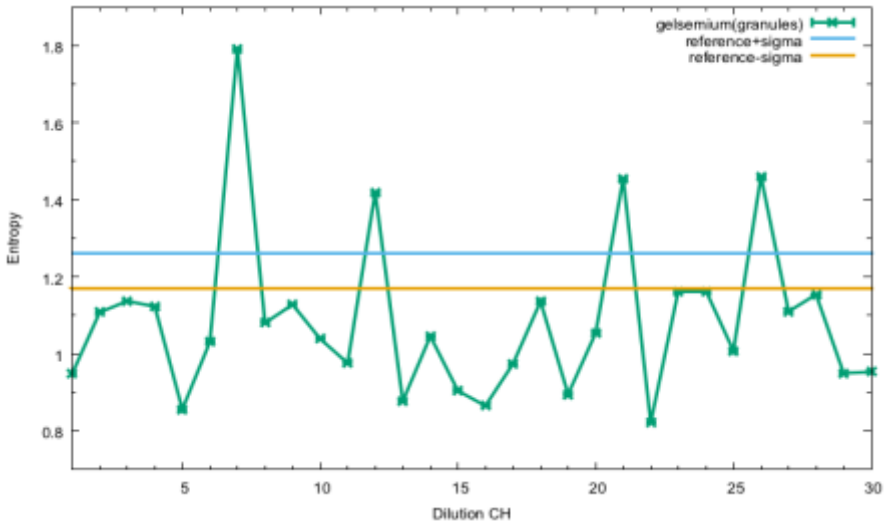
Potentized Gelsemium impreg. pills

Energy average energy value is found to be not statistically different from the granules impregnated with the pure solvent

Contrast average contrast value is found to be not statistically different from the reference

Entropy average entropy value is found to be not statistically different from the reference

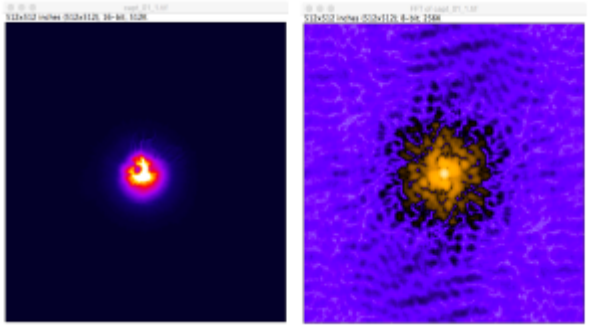




EPA Pills

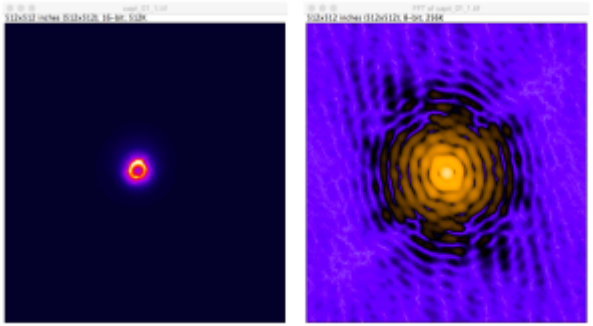
Impregnated potentized Gelsemium

Impregnated potentized Cuprum



Flask 232 (7 CH)
Gelsemium

Energy = 9 353
Contrast = 2 325
Entropy = 1.79207
Imin = 3
Imax = 255
nInt = 245

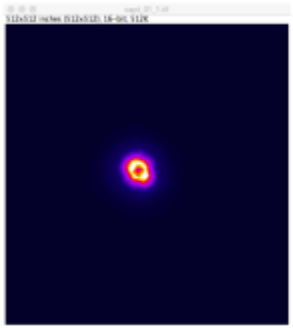


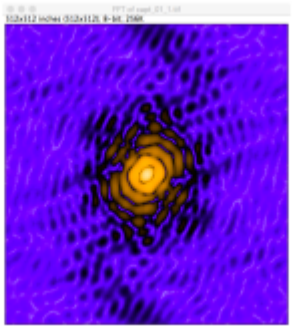
Flask 173 (7 CH)
cuprum metallicum

Energy = 5 556
Contrast = 2 199
Entropy = 1.11916
Imin = 3
Imax = 255
nInt = 233

Electrophotonic images with their fast Fourier transform. Looking at individual data, most granules display a contrast significantly different than the reference value plus or minus one standard deviation (green and blue lines). It follows that as already observed for the energy, gelsemium samples appears to behave quite differently from *cuprum metallicum* ones. By contrast with the energy distribution a negative skewness (left asymmetry) relative to a normal distribution is observed, meaning that high dilutions have more contrast than low dilutions. The kurtosis is also found to be negative relative to a normal distribution, meaning that the tails of the distribution (low and high dilutions) are depleted relative to the center (medium dilutions).

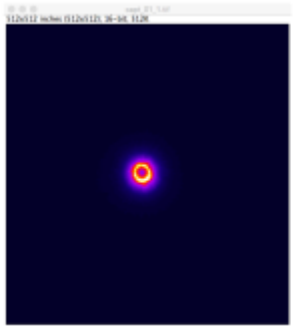
EPA Pills GELSEMIUM
Korsakov preparations

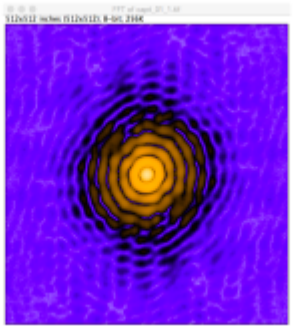




Flask 190 (200 K)

Energy = 7 461
Contrast = 2 579
Entropy = 1.34181
Imin = 3
Imax = 255
nInt = 250





Flask 217 (200 K)
2004

Energy = 6 146
Contrast = 2 367
Entropy = 1.16249
Imin = 3
Imax = 255
nInt = 249

By contrast with *cuprum metallicum* samples, it is observed that aging does not increase the photonic energy or the contrast. It also appears that the aged sample seems to be less emissive and have a lower entropy than the fresh one. The lower entropy of the aged sample means that the information content seems to have decreased over time, while the FFT evidences a larger frequency spreading.

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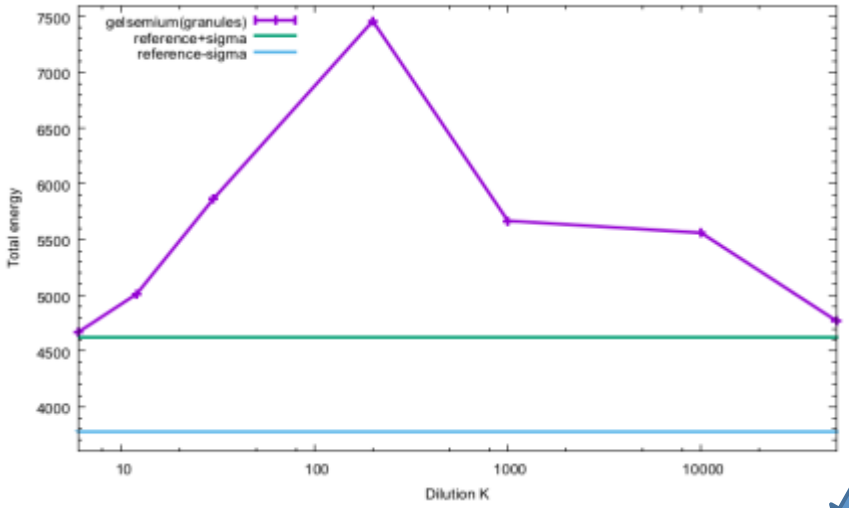
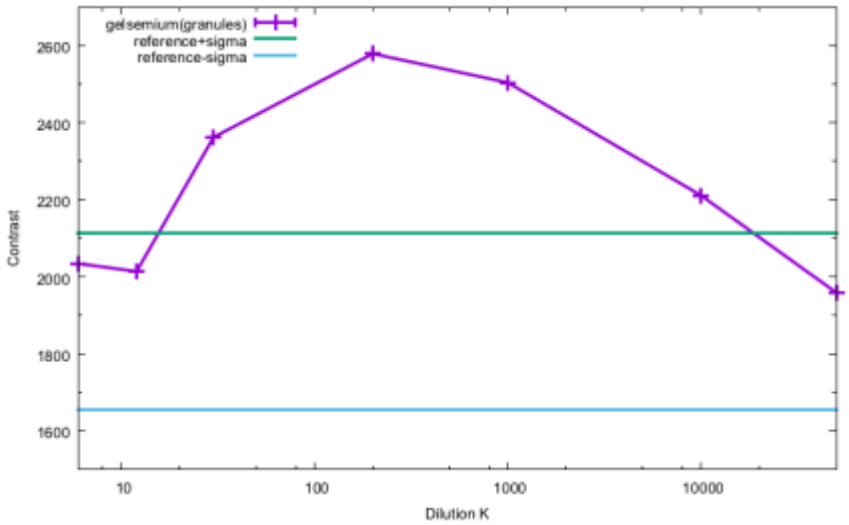


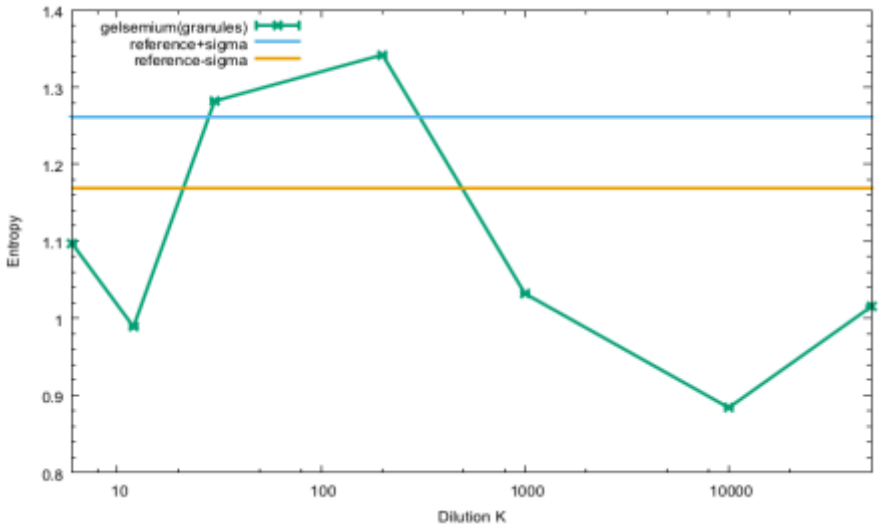
K Potentized GELSEMIUM imp. pills

Energy average energy value is found to be statistically different from the granules impregnated with the pure solvent

Contrast average contrast value is found to be not statistically different from the reference

Entropy average entropy value is found to be statistically different from the reference





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Conclusions :

- ✓ Granules impregnated with *cuprum metallicum* or *gelsemium* dynamized solutions are clearly distinguishable using electrophotonic analysis.
- ✓ Hahnemann's and Korsakov's protocols also lead to distinguishable images for the same kind of samples.
- ✓ It was also observed that samples aged of tens of years remains distinguishable from the reference or from fresh samples, evolving with time and evidencing a kind of improvement over time quite similar to that observed with wine and alcohols for example.
- ✓ All electrophotonic images display a characteristic more or less brilliant globular aspect, meaning that samples reacts mainly to the negative pulses of the generator and are insensitive to the positive pulses.