



Australian
Medical Cannabis
Conference 2019

Fast Centrifugal Partition Chromatography FCPC™

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Managing Director

About us



- Established in 1989, family owned
- Extensive experience in relevant chemistry & pharma
- 21 Team Members, growing quickly
 - Pharmaceutical Chemists (with validation experience)
 - Analytical Chemists
 - Engineers
 - Equipment Specialists
- Covering Australia and New Zealand with offices in Sydney, Brisbane, Melbourne, Perth, NZ with Partner
- Services include equipment consulting, application and technology support, equipment sales, installation, training and after sales service



About Kromaton



- Headquarter in Annonay France
- Established in 1990 with launch of the first chromatography tool
- Subsidiaries in USA, UK, Germany and Czech Republic
- 70 team members
- Owned by Rousselet Robatel – a global leader in industrial centrifugation
- Product Portfolio from crude to API
 - Solid Liquid Separation Centrifuges (Batch/Continuous)
 - Liquid/Liquid Extraction (Single/Multi Stage)
 - Fast Centrifugal Partition Chromatography



Intellectual Property

based on FCPC



- > 500 scientific publications & announcements with FCPC
 - > 600 patents based on / relating to use of FCPC
-
- Cannabinoids (THC, CBD...)
 - Flavonoids (flavones, flavonoid glycosides etc)
 - Terpenes (di- and triterpenes)
-
- Traditional Chinese Medicine
 - Aminoacids / Peptides / Proteins
 - Lipids
 - Polyphenols
 - Sugars
 - Toxins
 - Metals....



References

Cannabinoids - GW Pharma



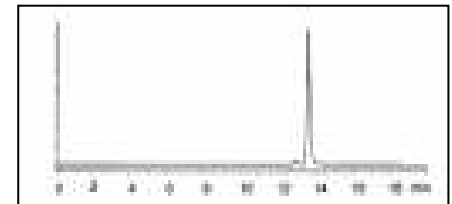
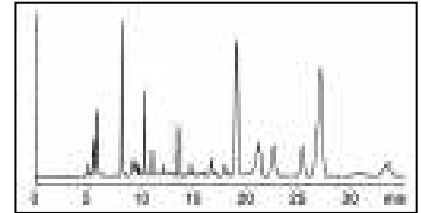
Cannabinoids - Bionorica



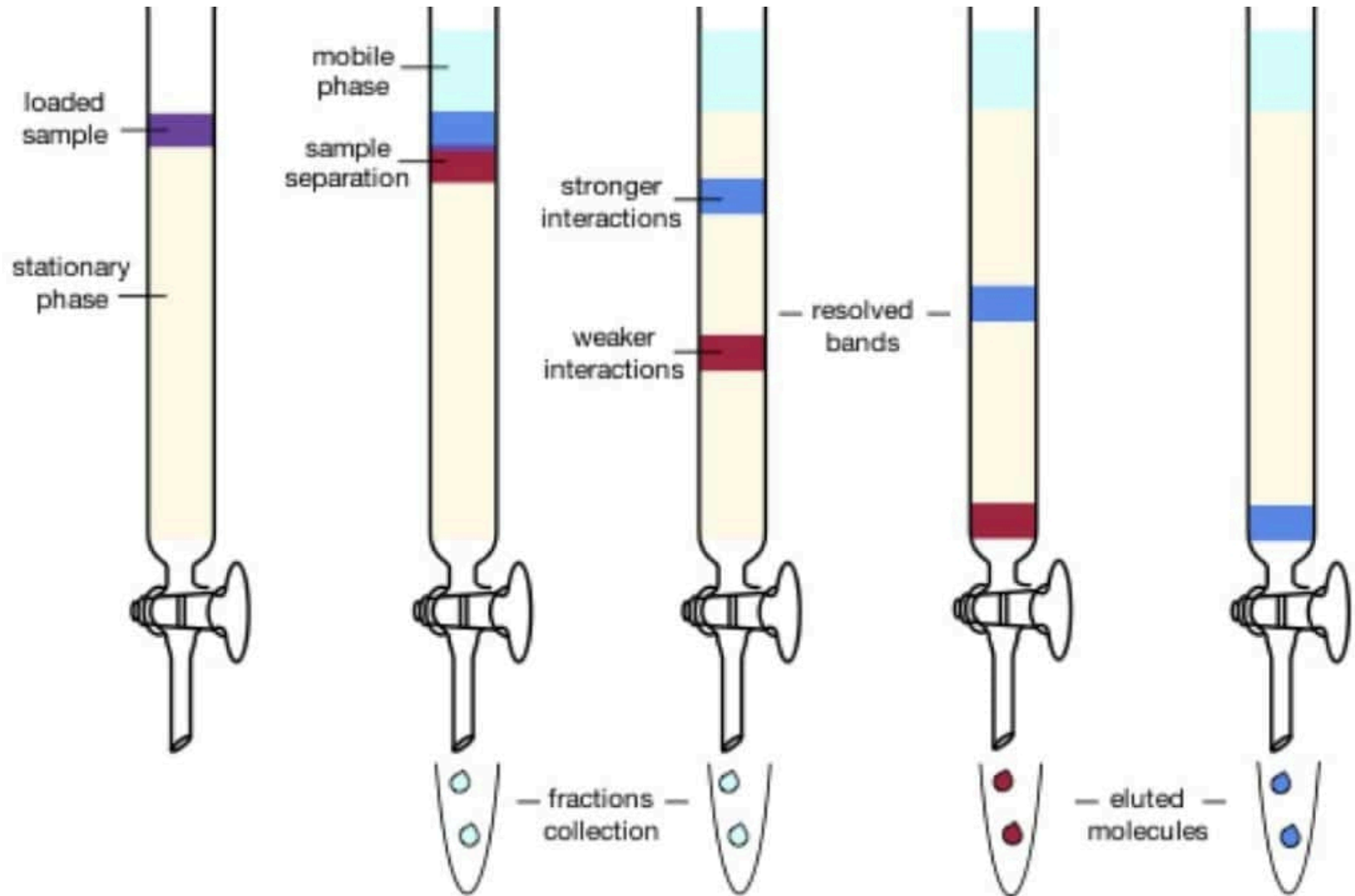
Pharma API – GSK



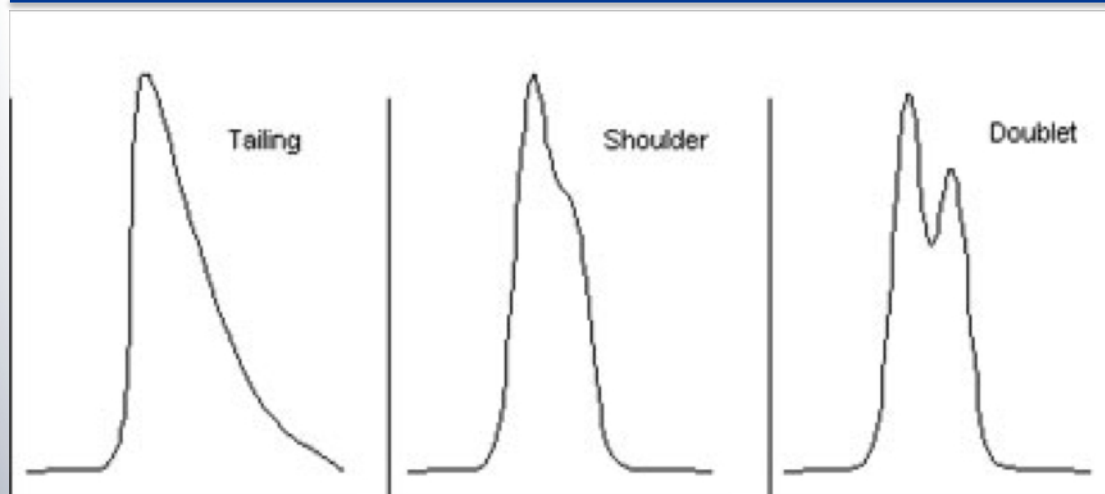
Phytocompounds - Merck



Chromatography Basics

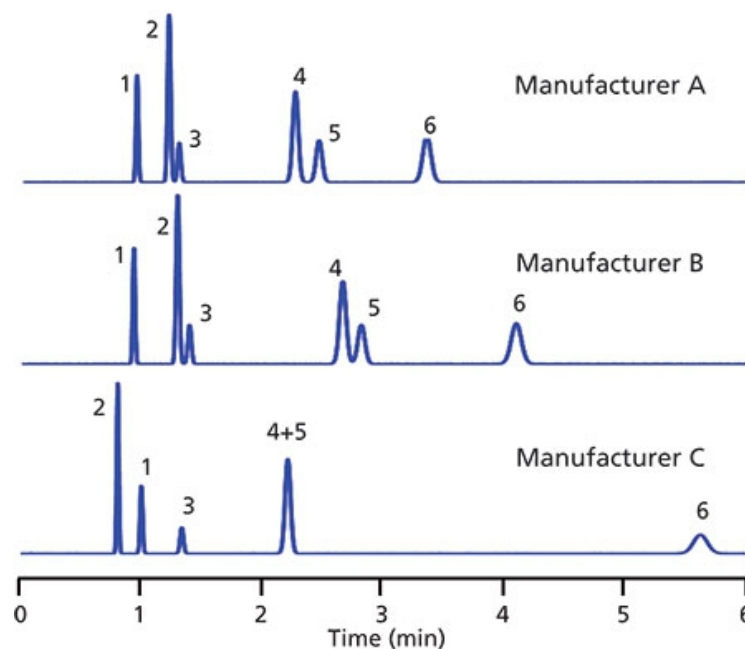


Column Chromatography Problems



Poor selectivity
Peak shape

Differences in selectivity
between columns from three
manufacturers



FCPC Basics

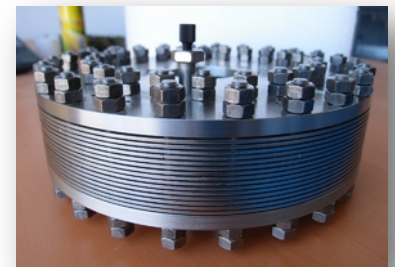
- Preparative (meaning large volume) chromatography technique
- Bi-phase solvent system (2 non miscible phases)
- Separation and elution of compounds based on partition between the two liquid phases
- Stationary phase is maintained inside the column through centrifugal force
- Mobile phase travels through stationary phase
- Countless parameters to work with – FCPC is extremely versatile



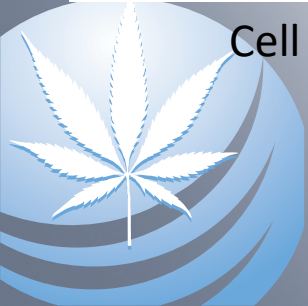
Cell



Disc



Column



FCPC Basics



Cannabinoid Isolation

CANNABINOID PURIFICATION

Fast Centrifugal Partition Chromatography (FCPC)

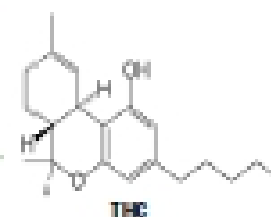
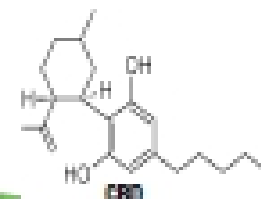
select and recover the compound of interest



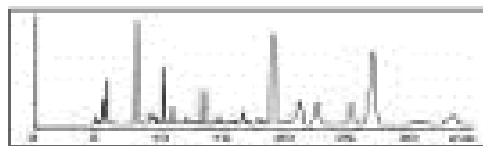
Crude Plant Extract



FCPC
Centrifugal
Chromatography



Pure Cannabinoids



GRAPH PROVIDED VIA HPLC



PURIFIED FRACTIONS OBTAINED WITH KROMATON
FCPC CENTRIFUGAL CHROMATOGRAPH

Cannabinoids Workflow



Supercritical CO2 extraction



Butter



Winterisation



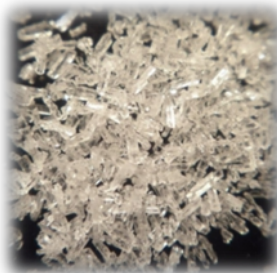
Winterised
Oil



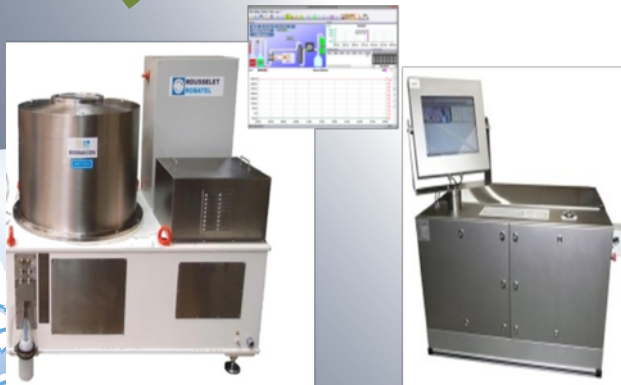
Ethanol Removal



Distilled Oil

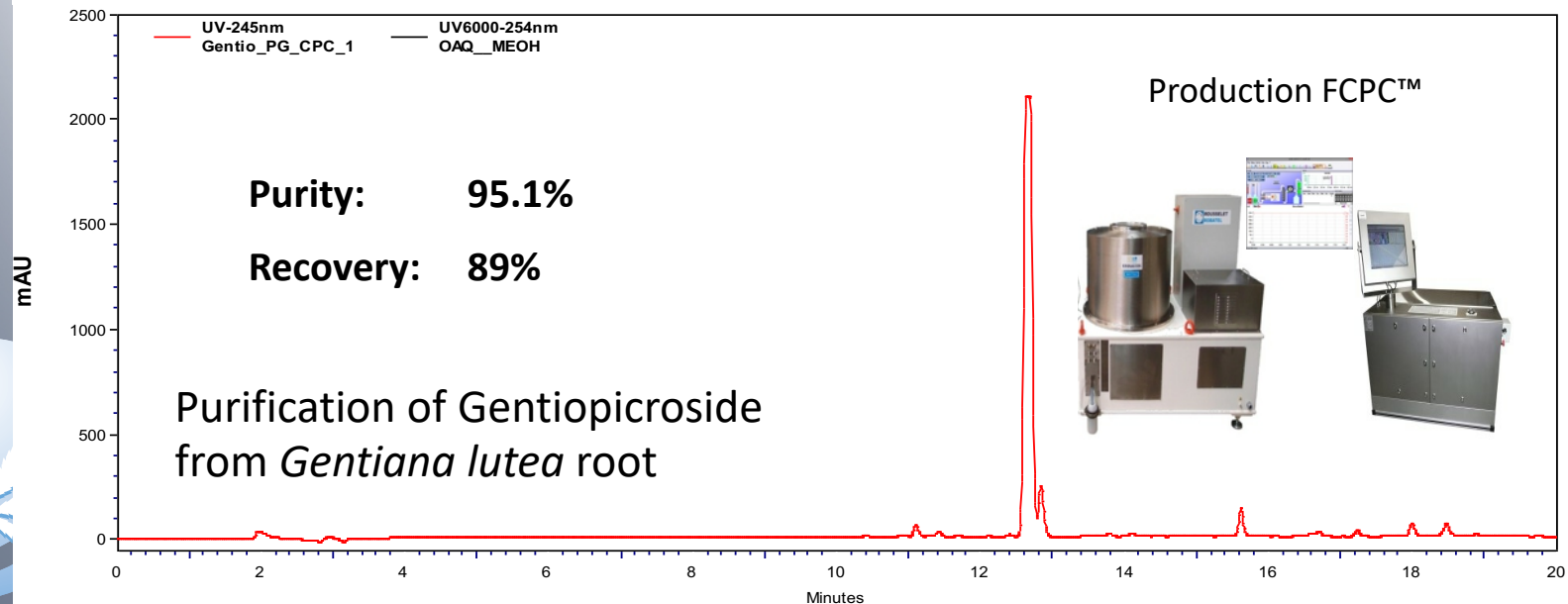
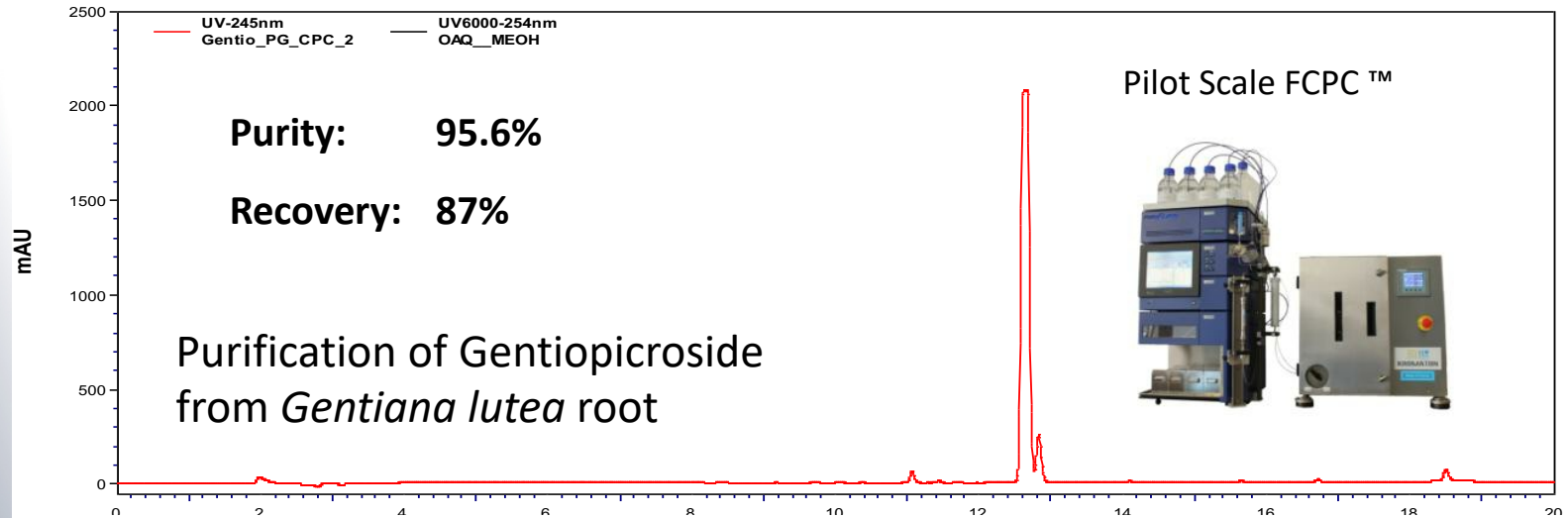


Pure cannabinoids >95 %



Fast Centrifugal Partition Chromatography

Purity / Recovery



Scalability

EtOAc = Ethyl Acetate
i-PROH = Isopropyl Alcohol
H2O = Water



PROCESS PARAMETERS & RESULTS 1L FCPC A

Flow rate	50 ml/min
Rotation speed	1200 rpm
Solvent system	EtOAc: i-PrOH: H2O 7/3/10
Injected Quantity	15g
Purity	95.6%
Recovery	87%
Solvent consumption	1.3L
Separation time	46 min.



PROCESS PARAMETERS & RESULTS 5L FCPC D

Flow rate	250 ml/min
Rotation speed	1000 rpm
Solvent system	EtOAc: i-PrOH: H2O 7/3/10
Injected Quantity	90g
Purity	95.1%
Recovery	89%
Solvent consumption	7.8L
Separation time	52 min.



Advantages

over column chromatography



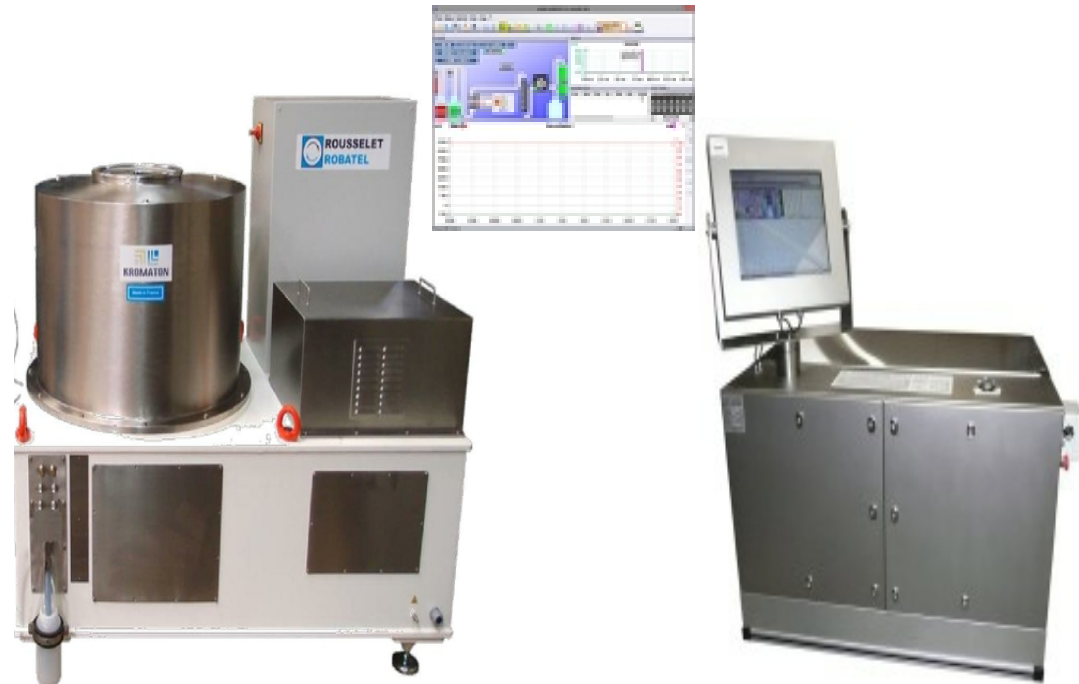
- ☺ 3-5 times faster than column chromatography
- ☺ 10-20% typical lower solvent consumption
- ☺ Near zero product loss in the solid phase
- ☺ No denaturation risk for fragile molecules due to interaction with solid phase
- ☺ No solid column packing material, which is expensive to buy, replace, re-process and dispose
- ☺ Consistent separation results due to elimination of inconsistent column packing
- ☺ No cartridge changeover
- ☺ Maintenance free
- ☺ GMP, ATEX, CIP compliant versions available
- ☺ Turnkey automation available
- ☺ Investment in line with production scale



Product Range



FCPC C – “Analytical” scale: 25 & 50ml



FCPC D 10000 - Production scale – 10 liters capacity: with automatic fraction collection system and software package



FCPC A with automatic fraction collection system and software package, 50- 1,000 ml

Product Range



- All stainless steel and Teflon
- 10l (or 5l) rotor
- Flow rate up to 2,000 ml per hour
- Kilo-per-batch capacity
- cGMP, ATEX, CIP etc
- Virtually maintenance free
- Turnkey automation including process development



Thank you!

Scitek Contacts

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