Campo Research & Development Systems

Ge 132

Novel Skin-Whitening Cosmetic Ge132

novel functional ingredients
for multi-purpose formulations

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CAMPO® Multi-Purpose Cosmetic Base Chemicals & Active Ingredients
CAMPO® Novel Functional Active Cosmetic Ingredient & Raw Materials

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Organic Germanium (Ge-132)

Organic Ge - 132 Sesquioxide

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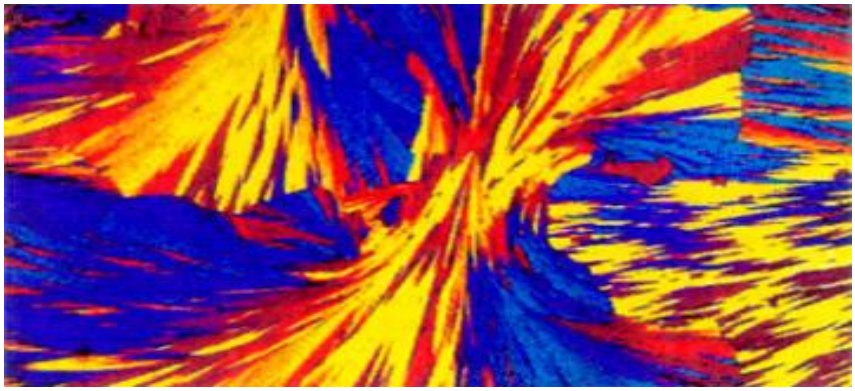
Ask about our Herbal Natural Products Chemistry Consultancy Services – Product Registration EEC/UK New Drug Development (NDA-US); Quasi-Drug Topicals (MOHW_Japan); Development of Standards, Analysis & Profiles of Phytochemicals; Literature searches, Cultivation of Medicinal Plants, Clinical-Trials, Development of new uses for Phytochemicals and Extracts; Contract Research and Development Work in Natural Products for Novel Drugs, New Cosmetic Active Ingredients for Active Topica/OTC Cosmetic with functionality and Consumer-perceivable immediate-results, New Food Ingredients for Nutraceuticals & Functional Foods.

Tyrosine-Melanin reduction enzyme (s)
Which convert melanin in to Leuco-Melanin*

Tyosine-Melanin reduction enzymes which are responsible for the catalyst & formation of Leuco-melanin are isolated, stabilized and optimized; and are optimized bio-available from the following natural products-cosmetic functional active extracts for new novel range of skin-whitening personal-care products:



- Campo Snow White Coral Algae Extract
- Campo Pearl Extract Pws
- Campo Pearl Bezoar Acid Extract-pbaws
    - **Campo Pearl Powder Extract**
    - **Campo Pearl Organic Germanium Extract-pogws**
    - **Campo Ginseng Organic Germanium Extract**
    - **Campo Garlic Organic Germanium Extract**
- **Campo Songyi Acid Complex**
- Campo Songyi Gel Liquid 25% (Matsutake-Kuseki)
    - **Campo Songyi Ethanol Fraction Extract and Campo Bird's Nest Extract**

***Leuco-melanin, a colorless, invisible melanin which is functional as photo-protection without darken skin pigment**

Novel Structure of a Leuco-Melanin reduction catalyst Enzyme (S) as found in our Campo Novel-Skin-Whitening Actives.

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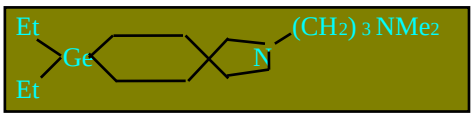
Product Name: *Organic Germanium (Ge-132)*

Chemical Syn.: *Carboxyethyl- germanium*

Structure:



Form : *Vegetal Isolate of Pre-digested and Bio-available Organic Germanium (Ge 132)- coupled with Ge-dependent superoxide dismutase (Ge-SOD) enzyme (EC1.15.1.11). (Germanium dioxide (inorganic germanium) - free)*

Natural Product Sources of Isolation

(A natural product bio-active isolates not a synthesized chemical entity)

1. *Garlic (Allium sativa)*
2. *Songyi (Tricholoma matsutake var. Campo-Songyi, a biosphere-altitude cultivated songyi/matsutake mushroom); and*
3. *Ganoderma lucidum (Reishi mushroom)*

SPECIFICATION

Appearance	**:**	**White Powder**
Purity	**:**	**100%**
Pure bio-available-organic Germanium	**:**	**0.95% (minimum)**
Solubility in water (90°C)	**:**	**99.0 - 99.5%**
Moisture content (20°C)	**:**	**<5%**
Arsenic content	**:**	**< 0.5 mg / kg**
Lead content	**:**	**< 1.0 mg / kg**
Mercury content	**:**	**< 0.5 mg / kg**

SPECIFICATION - Organic Ge - 132 Sesquioxide

Appearance	**:**	White Powder
Purity	**:**	100%
Pure bio-available--organic Germanium	**:**	0.95%
Pure inorganic Germanium (any other forms of Ge)	**:**	none / no traces
Solubility in water (90°C)	**:**	99.0 - 99.5%
Moisture content (20°C)	**:**	< 5%
Arsenic content	**:**	< 0.5 mg / kg
Lead content	**:**	< 1.0 mg / kg
Mercury content	**:**	< 0.5 mg / kg

Toxic germanium dioxide coupling content : none in any measurable value
(high toxicity Ge-132o (inorganic germanium) as synthesis by-product coupling to Ge-132 sesquioxide).

TOXICOLOGICAL PROFILE:

LD $_{50}$ rats-- oral : > 10,000 milligrams per kilogram body weight
LD $_{50}$ rats-- dermal : > 25,000 milligrams per kilogram body weight

Organic germanium 132 (natural product isolate) is essentially non-toxic edible food substance and a safe topical dermatologic route-absorbent substance
in comparison to **trace value measurable germanium dioxide (inorganic germanium) coupled to organic Ge-sesquioxide (synthesized related form)** at LD_{50} < 8 mg / kg body weight - - when assays were conducted in reference to: (tissues build-up of traces of Ge 132o and resulting in acute renal failure) *Journal of Toxicology and Science 10 (1985) : 333-41).*

Comments:
This is to certify that there is no organic germanium content in any measurable quantity - in trace value or otherwise present as germanium dioxide or in any other forms of inorganic germanium in this natural products isolated organic germanium.

Campo Research October 10th 1996.

Enzyme Structures Database

E.C.1.-.-.- Oxidoreductases.

E.C.1.15.-.- Acting on superoxide radicals as acceptor

E.C.1.15.1.- (Not defined)

E.C.1.15.1.1 Superoxide dismutase

Reaction: *2 peroxide radical = 2 H (+) = H (2) O (2).*
Cofactor(s): *Copper / zinc or iron or manganese.*

There are **18** PDB entries in enzyme class E.C.1.15.1.1

- **1 abm** (**Chain A**: CATH **1.1.5.1.1**; **Chain B**: CATH **1.1.5.1.1**)
  Structure: *Manganese superoxide dismutase*
  Source: *Human (Homo sapiens) kidney recombinant form expressed In (Escherichia coli, strain sodasodb)*
- **1 cob** (**Chain A**: CATH **2.2.2.12.1** ;(**Chain B**: CATH **2.2.2.12.1**)
  Structure: *Superoxide dismutase (co substituted)*
  Source: *Bovine (Bos taurus) erythrocytes*
- **1 ids**
  Structure: *Iron dependent superoxide dismutase (Fe-superoxide dismutase, fe-sod)*
  Source: *(Mycobacterium tuberculosis) recombinant form expressed in (Mycobacterium vaccae)*
- **1 isa**
  Structure: *Iron (ii) superoxide dismutase*
  Source: *(Escherichia coli)*
- **1 iqs**
  Structure: *(EC 1.15.1.11) Germanium 132- dependent superoxide (Ge 132- Superoxide dismutase, Ge-sod)*
  Source: *Allium sativa (garlic), Tricholoma matsutake (Songyi) and Ganoderma lucidum (Reishi / Lingzhi)*

Biscarboxyl ethyl Germanium sesquioxide
Purity: 100%; Pure content of organic bioavailable germanium Ge 132: 0.95% (min. content).

Moisture content: less than 5%
As content: less than 0.5 mg/kg
Pb content: less than 1.0 mg/kg
Hg content: less than 0.5 mg/kg

Solubility in water (90 deg. Cent.) : 99%

ICP (Inductively Coupled Plasma)

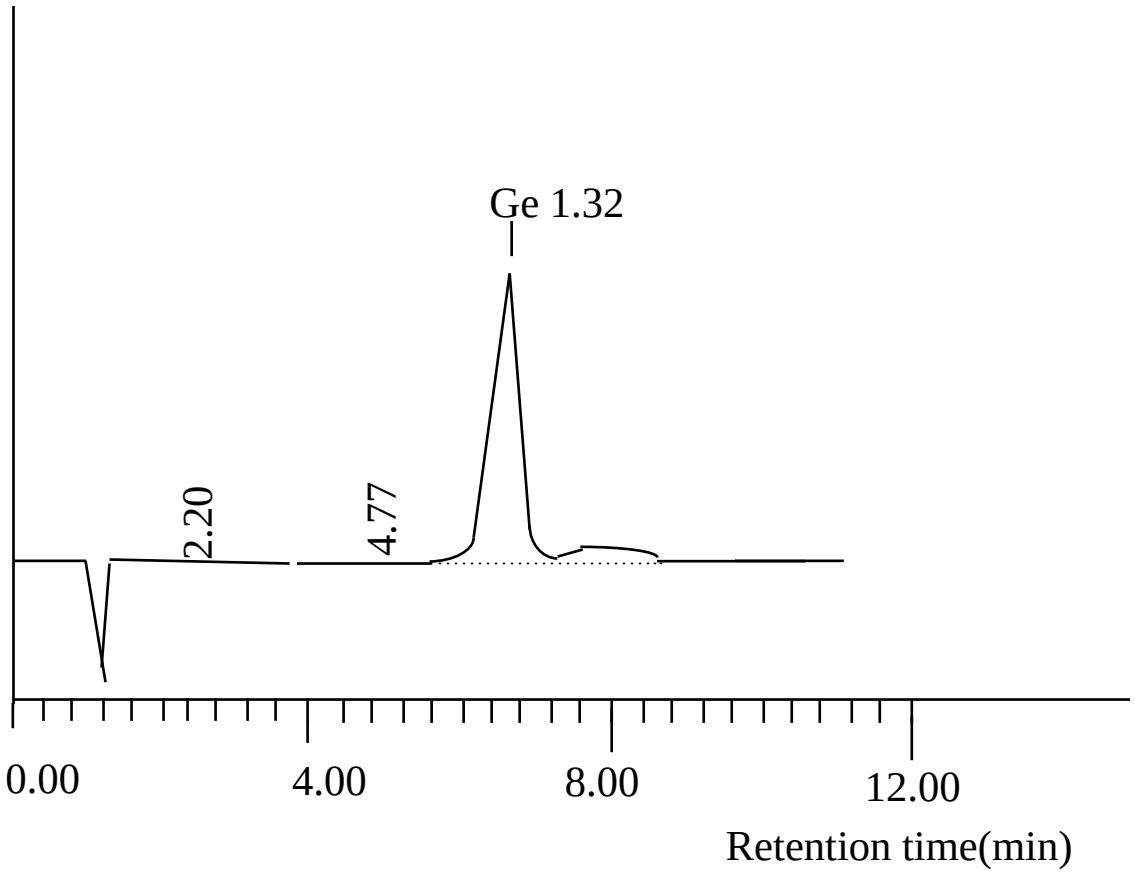
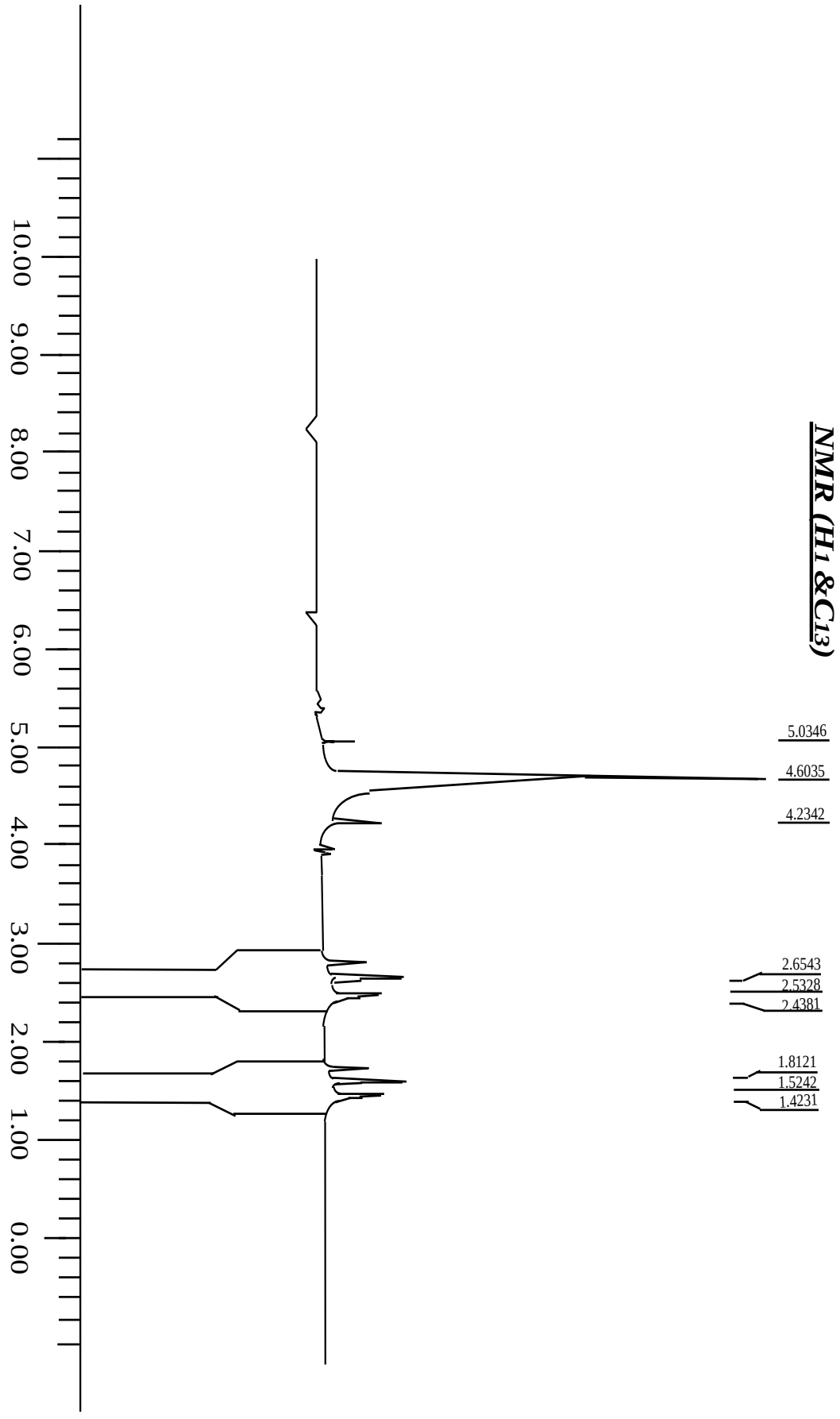
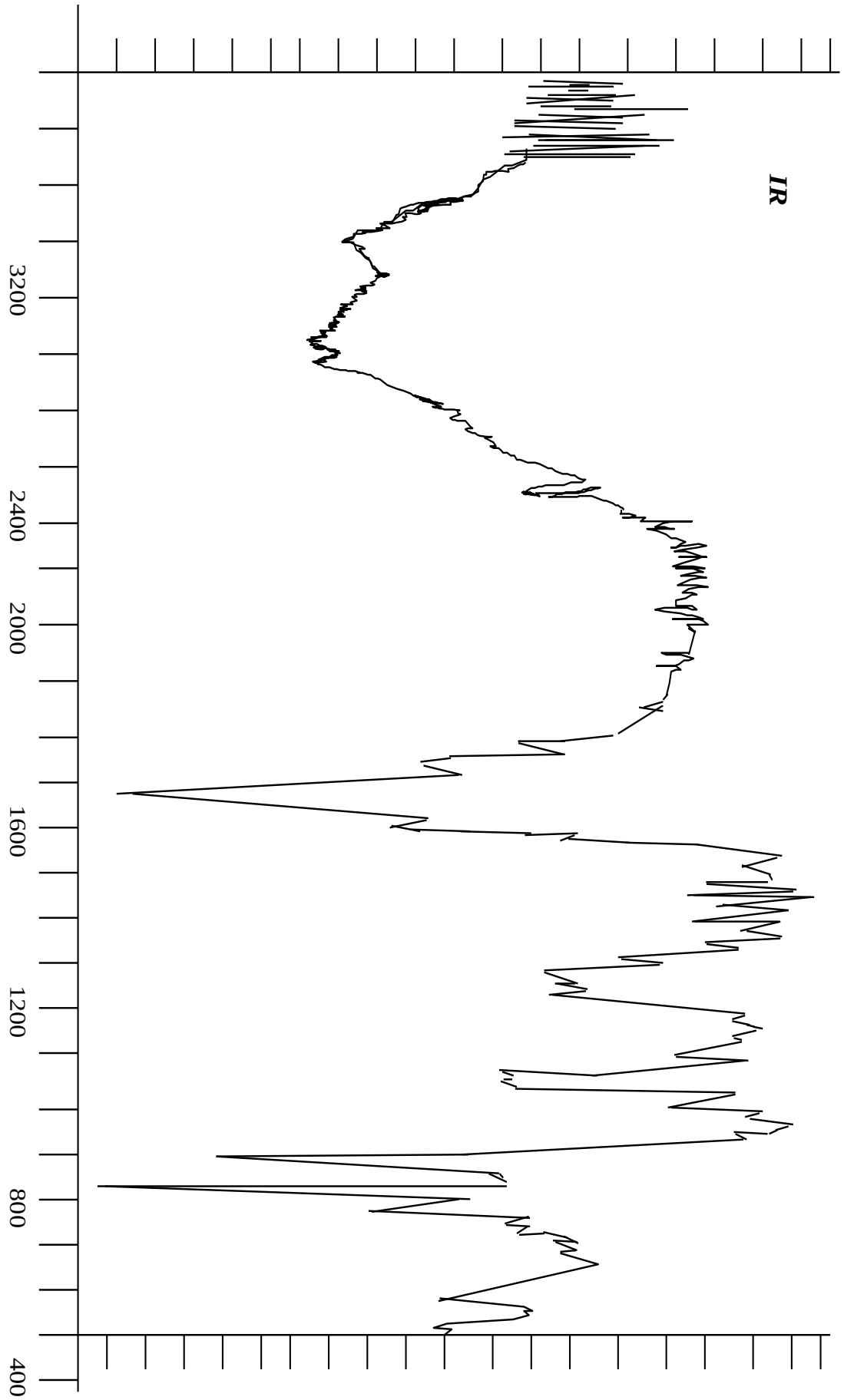


Figure 1





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