SIOMI
SOCIETÀ ITALIANA DI OMEOPATIA E MEDICINA INTEGRATA

VII Convegno Nazionale Triennale

Omeopatia, tra Medicina delle evidenze e Medicina narrativa

Crediti ECM richiesti

4-6 Marzo 2016

Hotel Baglioni, Piazza dell'Unità dell'Italia, 6 Firenze

Omeopatia e farmacologia delle microdosi

Simonetta Bernardini

SIOMI

Nuove frontiere della ricerca in omeopatia

- ⟹ La farmacologia delle microdosi

SIOMI

Anno 2000 microarray technology

- Microarray technology: Pub Med 99.000 articoli dal 2006
- Anno 2008 microarray technology e omeopatia

SIOMI

Espressione genica e omeopatia 2008

Journal of Cellular Biochemistry 104:1364–1377 (2008)

Gene Expression Profiling of Macrophages Following Mice Treatment With an Immunomodulator Medication

Carolina Camargo de Oliveira,[1]* Simone Martins de Oliveira,[1] Viviane M. Goes,[2] Christian M. Probst,[2] Marco Aurelio Krieger,[2] and Dorly de Freitas Buchi[1]*

[1]Departamento de Biologia Celular, Universidade Federal do Paraná (UFPR), SCB, Curitiba, Paraná, Brazil
[2]Instituto de Biologia Molecular do Paraná (IBMP), Curitiba, Paraná, Brazil

water—are performed. The *Canova* components are soluble in water. The final commercial product, *Canova*, is composed of 11 dH *Aconitum napellus* (Ranunculaceae), 19 dH *Thuya occidentalis* (Cupresaceae), 18 dH *Bryonia alba* (Curcubitaceae), 19 dH *Arsenicum album* (arsenic trioxide), 18 dH *Lachesis muta* (Viperidae) and less than 1% ethanol in distilled water. In our experiments we used the commer-

SIOMI

Ormesi, concetto centrale per lo sviluppo della ricerca in omeopatia

Available online at www.sciencedirect.com
SCIENCE DIRECT
Toxicology and Applied Pharmacology 211 (2006) 84–85
Toxicology and Applied Pharmacology
www.elsevier.com/locate/ytaap

Letter to the Editor

Hormesis may provide a central concept for homeopathy development

reacts in order to quench the perturbation, but it also prepares itself for further interaction by strengthening its defence–repair

Simonetta Bernardini
Società Italiana di Omeopatia e Medicina Integrata (S.I.O.M.I.), Via Cornalia, Milano

Andrea Dei
Dipartimento di Chimica, Università di Firenze, Via della Lastruccia 3, 50019 Sesto Fiorentino-Firenze, Italy
E-mail address: andrea.dei@unifi.it.
Corresponding author.

18 October 2005

SIOMI

Espressione genica e omeopatia su 41.000 geni cellulari (2010) Copper 3-7-9 C

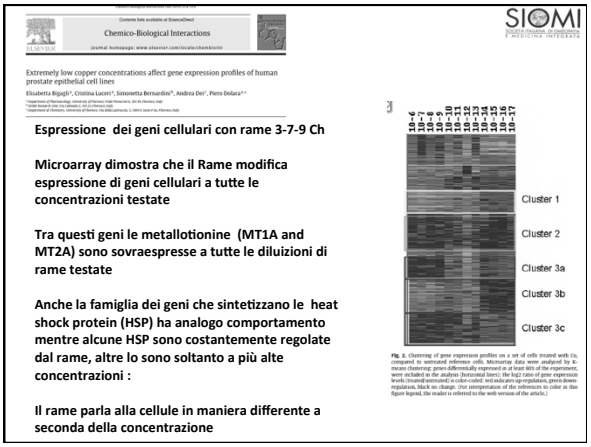
Chemico-Biological Interactions 188 (2010) 214–219
Contents lists available at ScienceDirect
Chemico-Biological Interactions
journal homepage: www.elsevier.com/locate/chembioint

Extremely low copper concentrations affect gene expression profiles of human prostate epithelial cell lines

Elisabetta Bigagli[a], Cristina Luceri[a], Simonetta Bernardini[b], Andrea Dei[c], Piero Dolara[a,*]

[a] Department of Pharmacology, University of Florence, Viale Pieraccini 6, 50139, Florence, Italy
[b] SIOMI Research Unit, Via Calimala 2, 50123, Florence, Italy
[c] Department of Chemistry, University of Florence, Via della Lastruccia, 3, 50019, Sesto F.no, Florence, Italy

SIOMI


Chemico-Biological Interactions

Extremely low copper concentrations affect gene expression profiles of human prostate epithelial cell lines

Espressione dei geni cellulari con rame 3-7-9 Ch

Microarray dimostra che il Rame modifica espressione di geni cellulari a tutte le concentrazioni testate

Tra questi geni le metallotionine (MT1A and MT2A) sono sovraespresse a tutte le diluizioni di rame testate

Anche la famiglia dei geni che sintetizzano le heat shock protein (HSP) ha analogo comportamento mentre alcune HSP sono costantemente regolate dal rame, altre lo sono soltanto a più alte concentrazioni :

Il rame parla alla cellule in maniera differente a seconda della concentrazione

Cluster 1
Cluster 2
Cluster 3a
Cluster 3b
Cluster 3c

Apis m. e espressione genica su 41.000 geni cellulari, 2014

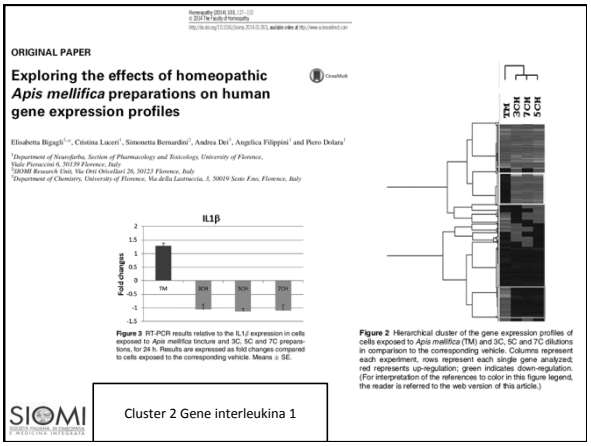
Homeopathy (2014) 103, 127–132
© 2014 The Faculty of Homeopathy
http://dx.doi.org/10.1016/j.homp.2014.01.003, available online at http://www.sciencedirect.com

ORIGINAL PAPER

Exploring the effects of homeopathic *Apis mellifica* preparations on human gene expression profiles

Elisabetta Bigagli[1,*], Cristina Luceri[1], Simonetta Bernardini[2], Andrea Dei[3], Angelica Filippini[1] and Piero Dolara[1]

[1]*Department of Neurofarba, Section of Pharmacology and Toxicology, University of Florence, Viale Pieraccini 6, 50139 Florence, Italy*
[2]*SIOMI Research Unit, Via Orti Oricellari 26, 50123 Florence, Italy*
[3]*Department of Chemistry, University of Florence, Via della Lastruccia, 3, 50019 Sesto F.no, Florence, Italy*


ORIGINAL PAPER

Exploring the effects of homeopathic *Apis mellifica* preparations on human gene expression profiles

Elisabetta Bigagli[1,*], Cristina Luceri[1], Simonetta Bernardini[2], Andrea Dei[3], Angelica Filippini[1] and Piero Dolara[1]

IL1β

Fold changes

TM 3CH 5CH 7CH

Figure 3 RT-PCR results relative to the IL1*β* expression in cells exposed to *Apis mellifica* tincture and 3C, 5C and 7C preparations, for 24 h. Results are expressed as fold changes compared to cells exposed to the corresponding vehicle. Means ± SE.

Figure 2 Hierarchical cluster of the gene expression profiles of cells exposed to *Apis mellifica* (TM) and 3C, 5C and 7C dilutions in comparison to the corresponding vehicle. Columns represent each experiment, rows represent each single gene analyzed; red represents up-regulation; green indicates down-regulation. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Cluster 2 Gene interleukina 1

Omeopatia e geni regolatori ipotesi 2013

Int J High Dilution Res 2013; 12(43):162-167

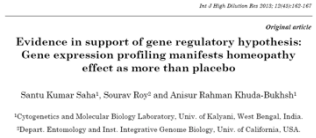
Original article

Evidence in support of gene regulatory hypothesis: Gene expression profiling manifests homeopathy effect as more than placebo

Santu Kumar Saha[1], Sourav Roy[2] and Anisur Rahman Khuda-Bukhsh[1]

[1]Cytogenetics and Molecular Biology Laboratory, Univ. of Kalyani, West Bengal, India.
[2]Depart. Entomology and Inst. Integrative Genome Biology, Univ. of California, USA.

Ultralow e ipotesi dei geni regolatori
2013, 40600 geni cellulari


Int J High Dilution Res 2013; 12(43):162-167

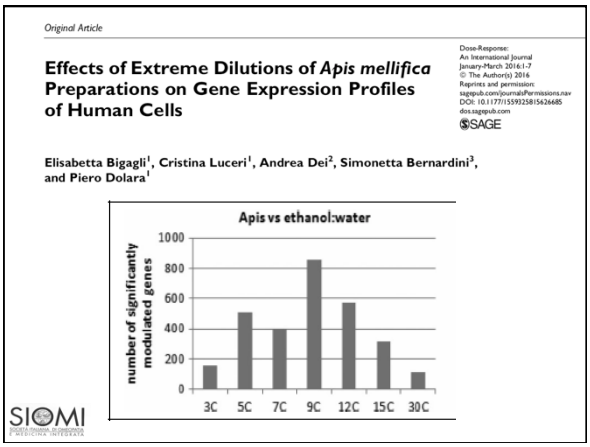
Original article

Evidence in support of gene regulatory hypothesis: Gene expression profiling manifests homeopathy effect as more than placebo

Santu Kumar Saha[1], Sourav Roy[2] and Anisur Rahman Khuda-Bukhsh[1]

[1]Cytogenetics and Molecular Biology Laboratory, Univ. of Kalyani, West Bengal, India.
[2]Depart. Entomology and Inst. Integrative Genome Biology, Univ. of California, USA.

L'espressione genica di cellule cancerose della linea HeLa differisce qualitativamente e quantitativamente dopo trattamento con due rimedi omeopatici usati contro il cancro: Condurango 30C e Hydrastis c. 30 C per confronto con etanolo 30 C.


Original Article

Effects of Extreme Dilutions of *Apis mellifica* Preparations on Gene Expression Profiles of Human Cells

Dose-Response:
An International Journal
January-March 2016:1-7
© The Author(s) 2016
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1559325815626685
dos.sagepub.com
SAGE

Elisabetta Bigagli[1], Cristina Luceri[1], Andrea Dei[2], Simonetta Bernardini[3], and Piero Dolara[1]

Apis vs ethanol:water

number of significantly modulated genes

1000
800
600
400
200
0

3C 5C 7C 9C 12C 15C 30C

Effects of *Gelsemium sempervirens* L. on pathway-focused gene expression profiling in neuronal cells

Debora Olioso[1], Marta Marzotto[1], Elisabetta Moratti[1], Maurizio Brizzi[2] and Paolo Bellavite[1]

J Ethnopharmacol. 2014. doi: 10.1016/j.jep.2014.02.048. [Epub ahead of print]

[1] Department of Pathology and Diagnostics, University of Verona, Strada Le Grazie 8, 37134 Verona, Italy
[2] Department of Statistical Sciences, University of Bologna, Via delle Belle Arti 41, 40126 Bologna, Italy

- **Su cellule di neuroblastoma**

Gelsemium s. 2 C

Risultati:

Down regulation di 45 geni e sovraespressione di 8 geni

SIOMI

Effects of *Gelsemium sempervirens* L. on pathway-focused gene expression profiling in neuronal cells

Debora Olioso[1], Marta Marzotto[1], Elisabetta Moratti[1], Maurizio Brizzi[2] and Paolo Bellavite[1]

J Ethnopharmacol. 2014. doi: 10.1016/j.jep.2014.02.048. [Epub ahead of print]

[1] Department of Pathology and Diagnostics, University of Verona, Strada Le Grazie 8, 37134 Verona, Italy
[2] Department of Statistical Sciences, University of Bologna, Via delle Belle Arti 41, 40126 Bologna, Italy

- **Ridotta espressione genica di:**
- PK2- avente effetto soppressivo su GABA
- Recettore dopamina DRD2 che esita in effetto ansiolitico

SIOMI

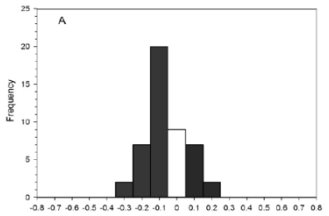
Effects of *Gelsemium sempervirens* L. on pathway-focused gene expression profiling in neuronal cells

Debora Olioso[1], Marta Marzotto[1], Elisabetta Moratti[1], Maurizio Brizzi[2] and Paolo Bellavite[1]

J Ethnopharmacol. 2014. doi: 10.1016/j.jep.2014.02.048. [Epub ahead of print]

[1] Department of Pathology and Diagnostics, University of Verona, Strada Le Grazie 8, 37134 Verona, Italy
[2] Department of Statistical Sciences, University of Bologna, Via delle Belle Arti 41, 40126 Bologna, Italy

Gelsemium s. 2-3-4-5-9-30 C



Blu = down regulation

SIOMI

Marzotto et al. BMC Complementary and Alternative Medicine 2014, 14:104
http://www.biomedcentral.com/1472-6882/14/104

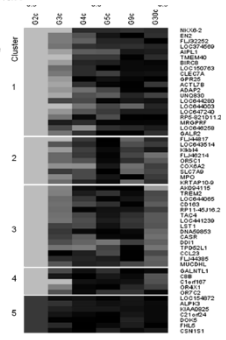
BMC Complementary & Alternative Medicine

RESEARCH ARTICLE Open Access

Extreme sensitivity of gene expression in human SH-SY5Y neurocytes to ultra-low doses of *Gelsemium sempervirens*

Marta Marzotto[1], Debora Olioso[1], Maurizio Brizzi[2], Paola Tononi[3], Mirco Cristofoletti[1] and Paolo Bellavite[1]

Blu = down regulation
Rosso = up regulation



SIOMI

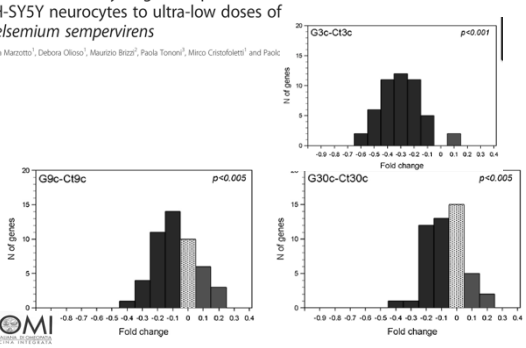
Marzotto et al. BMC Complementary and Alternative Medicine 2014, 14:104
http://www.biomedcentral.com/1472-6882/14/104

BMC Complementary & Alternative Medicine

RESEARCH ARTICLE Open Access

Extreme sensitivity of gene expression in human SH-SY5Y neurocytes to ultra-low doses of *Gelsemium sempervirens*

Marta Marzotto[1], Debora Olioso[1], Maurizio Brizzi[2], Paola Tononi[3], Mirco Cristofoletti[1] and Paolo



SIOMI

Homeopathy (2014) 103, 127–132
© 2014 The Faculty of Homeopathy
http://dx.doi.org/10.1016/j.homp.2014.02.001, available online at http://www.sciencedirect.com

ORIGINAL PAPER

Exploring the effects of homeopathic *Apis mellifica* preparations on human gene expression profiles

Elisabetta Bigagli[1,*], Cristina Luceri[1], Simonetta Bernardini[2], Andrea Dei[1], Angelica Filippini[1] and Piero Dolara[1]

[1]Department of Neurofarba, Section of Pharmacology and Toxicology, University of Florence, Viale Pieraccini 6, 50139 Florence, Italy
[2]SIOMI Research Unit, Via Orti Oricellari 26, 50123 Florence, Italy
[3]Department of Chemistry, University of Florence, Via della Lastruccia, 3, 50019 Sesto Fno, Florence, Italy

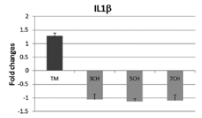


Figure 3 RT-PCR results relative to the IL1β expression in cells exposed to *Apis mellifica* tincture and 3C, 5C and 7C preparations, for 24 h. Results are expressed as fold changes compared to cells exposed to the corresponding vehicle. Means ± SE.

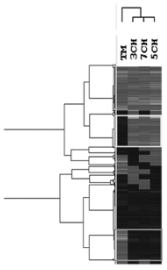


Figure 2 Hierarchical cluster of the gene expression profiles of cells exposed to *Apis mellifica* (TM) and 3C, 5C and 7C dilutions in comparison to the corresponding vehicle. Columns represent each experiment, rows represent each single gene analyzed; red represents up-regulation; green indicates down-regulation. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

SIOMI

Cluster 2 Gene interleukina 1

Microarray, espressione genica e ormesi

E il Dei?

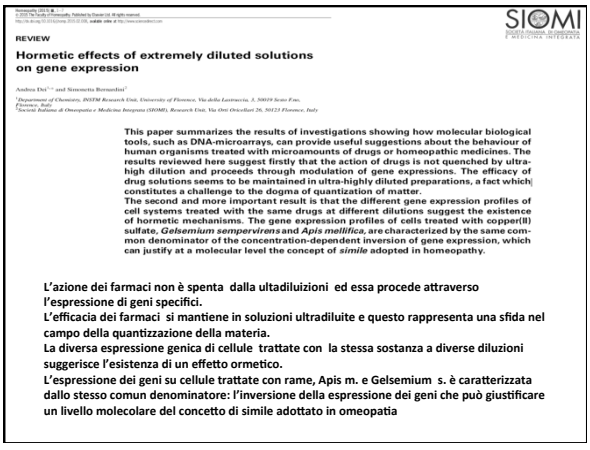
Homeopathy (2015) ■, 1–7
© 2015 The Faculty of Homeopathy. Published by Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.homp.2015.02.006, available online at http://www.sciencedirect.com

REVIEW

Hormetic effects of extremely diluted solutions on gene expression

Andrea Dei[1,*] and Simonetta Bernardini[2]

[1]*Department of Chemistry, INSTM Research Unit, University of Florence, Via della Lastruccia, 3, 50019 Sesto F.no, Florence, Italy*
[2]*Società Italiana di Omeopatia e Medicina Integrata (SIOMI), Research Unit, Via Orti Oricellari 26, 50123 Florence, Italy*



REVIEW

Hormetic effects of extremely diluted solutions on gene expression

Andrea Dei[1,*] and Simonetta Bernardini[2]

[1]*Department of Chemistry, INSTM Research Unit, University of Florence, Via della Lastruccia, 3, 50019 Sesto F.no, Florence, Italy*
[2]*Società Italiana di Omeopatia e Medicina Integrata (SIOMI), Research Unit, Via Orti Oricellari 26, 50123 Florence, Italy*

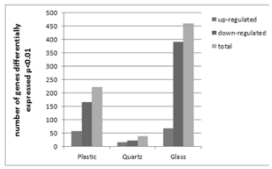
This paper summarizes the results of investigations showing how molecular biological tools, such as DNA-microarrays, can provide useful suggestions about the behaviour of human organisms treated with microamounts of drugs or homeopathic medicines. The results reviewed here suggest firstly that the action of drugs is not quenched by ultra-high dilution and proceeds through modulation of gene expressions. The efficacy of drug solutions seems to be maintained in ultra-highly diluted preparations, a fact which constitutes a challenge to the dogma of quantization of matter.
The second and more important result is that the different gene expression profiles of cell systems treated with the same drugs at different dilutions suggest the existence of hormetic mechanisms. The gene expression profiles of cells treated with copper(II) sulfate, *Gelsemium sempervirens* and *Apis mellifica*, are characterized by the same common denominator of the concentration-dependent inversion of gene expression, which can justify at a molecular level the concept of *simile* adopted in homeopathy.

L'azione dei farmaci non è spenta dalla ultadiluizioni ed essa procede attraverso l'espressione di geni specifici.
L'efficacia dei farmaci si mantiene in soluzioni ultradiluite e questo rappresenta una sfida nel campo della quantizzazione della materia.
La diversa espressione genica di cellule trattate con la stessa sostanza a diverse diluzioni suggerisce l'esistenza di un effetto ormetico.
L'espressione dei geni su cellule trattate con rame, Apis m. e Gelsemium s. è caratterizzata dallo stesso comun denominatore: l'inversione della espressione dei geni che può giustificare un livello molecolare del concetto di simile adottato in omeopatia

Attenzione!

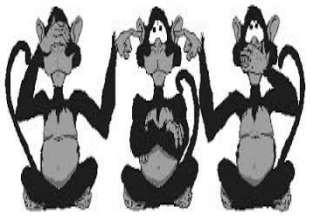
Expression profiles of RWPE cells exposed to water potentiated in glass, plastic or quartz containers.

Risultati preliminari



		Plastic	Quartz	Glass
FC>2	up-regulated genes	57	16	68
p<0.01	down-regulated genes	166	23	392
	total	223	39	460

Sponsored by SIOMI Research Unit



Edward J. Calabrese: la nuova omeopatia

SETAC PRESS

Environmental Toxicology and Chemistry, Vol. 31, No. 12, p. 2723, 2012
© 2012 SETAC
Printed in the USA
DOI: 10.1002/etc.2015

Editorial

LINEAR NO THRESHOLD (LNT)—THE NEW HOMEOPATHY

Edward J. Calabrese
University of Massachusetts
Amherst, Massachusetts, USA

Ralph R. Cook
Dexter, Michigan, USA

Jaap C. Hanekamp
Roosevelt Academy
Middelburg, The Netherlands

Edward J. Calabrese: la nuova omeopatia

- discutere la questione delle alte diluizioni omeopatiche, poichè essa è una pratica molto al di fuori del mainstream della scienza medica, la terapia e la pratica.
- Più precisamente, vogliamo sottolineare che le valutazioni del rischio di cancro della US Environmental Protection Agency (US EPA), che sono fortemente dipendenti dalla dose-risposta lineare, ironia della sorte, hanno una sorprendente somiglianza con le alte diluizioni omeopatiche

Edward J. Calabrese: la nuova omeopatia

- <u>L'ironia della somiglianza :</u>
- Le risposte biologiche alle basse dosi in omeopatia sono respinte con intellettuale disdegno da tutta la comunità biomedica.
- Nello stesso tempo, tuttavia, l'EPA (Environmental Protection Agency) statunitense e la Food and Drug Administration affermano con grande autorità istituzionale e giuridica che anche una singola molecola di una sostanza chimica o un fotone ionizzante può causare il cancro.

Edward J. Calabrese: la nuova omeopatia

Mentre il consumatore può scegliere di accettare il trattamento con le alte diluizioni omeopatiche, l'intera società è costretta ad accettare i dettami normativi ambientali di rischio accettati a livello globale sebbene essi siano oltre i principi della ragione, incoerenti con una vasta area della letteratura biomedica e empiricamente verificabili.

In cammino…….

Grazie!.....