ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Padova, 25 Novembre 2017

INTERNATIONAL SOCIETY OF DOCTORS FOR ENVIRONMENT
ISDE

Alimentazione convenzionale e alimentazione biologica in gravidanza:

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Specialista in Scienza dell'Alimentazione
Dipartimento di Scienze Biomediche e Neuromotorie Università di Bologna, ISDE

Programming Nutrizionale:

Come le scelte alimentari dalla fase fetale dei primi mesi e possono davvero condizionare la salute del futuro adulto.

Alimentazione materna durante la gestazione
vita fetale

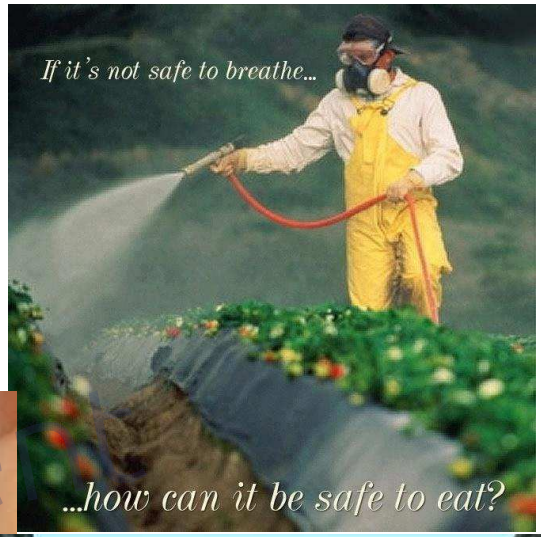
Alimentazione durante allattamento svezzamento prima infanzia
vita post-fetale

Intra-uterina neonatale

Infanzia Adolescenza Pubertà

Età Adulta Senescenza

Siamo quel che mangiamo



....ma non solo

Contaminanti nella catena alimentare. Cosa Preoccupa?

Diossine

I PCB provocano il cancro negli esseri umani, inseriti nel Gruppo 1 della classificazione IARC (cancerogeni certi) interferenti endocrini

Pesticidi

Alcuni inseriti nel Gruppo 1 IARC (cancerogeni certi) altri definiti interferenti endocrini neurotossici clorpirifos) altri probabili cancerogeni gruppo 2A, IARC (glifosato) e interferenti endocrini

Arsenico

inseriti nel Gruppo 1 della classificazione IARC (cancerogeni certi)

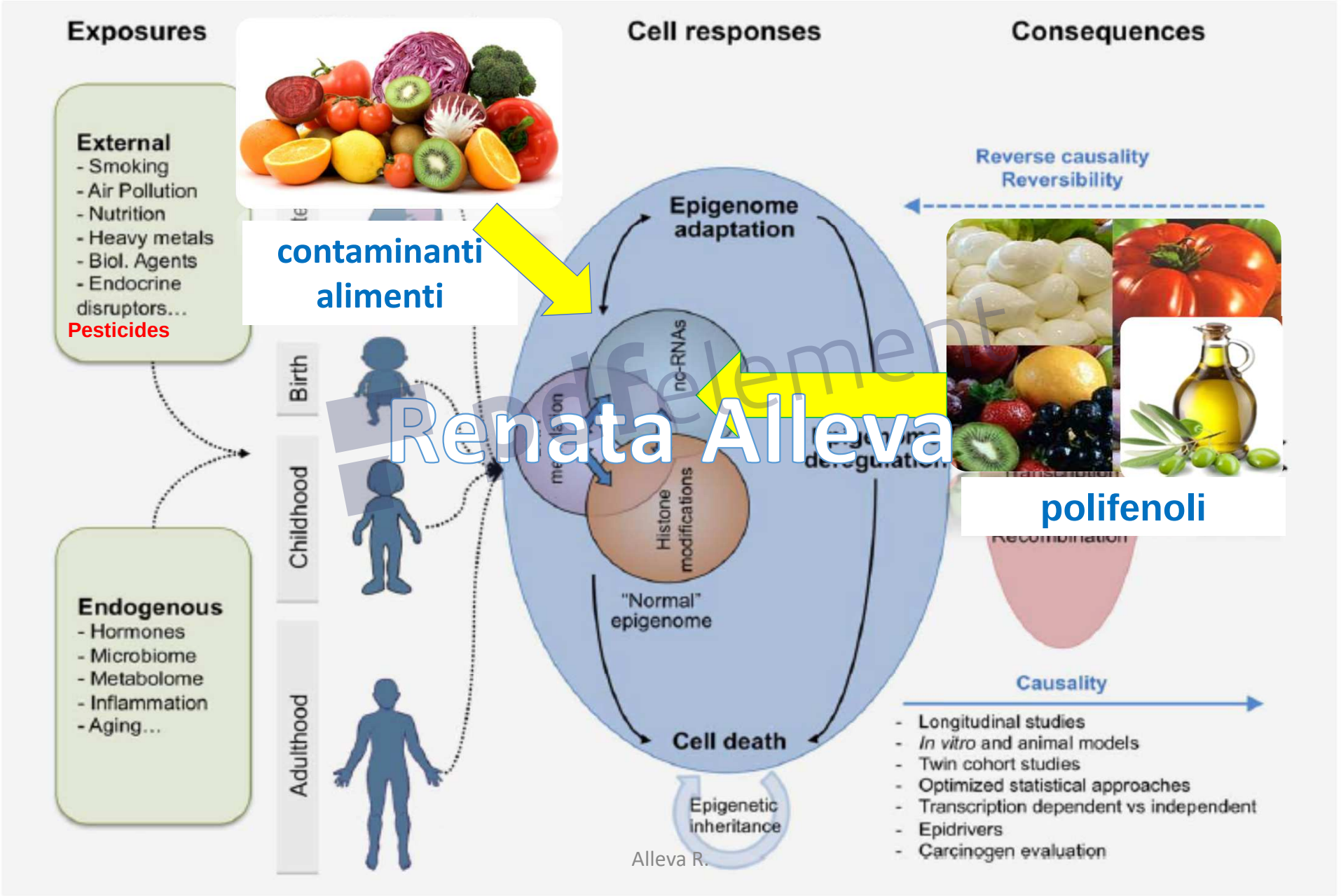
Metilmercurio

Neurotossico, (autismo) disturbi del neurosviluppo

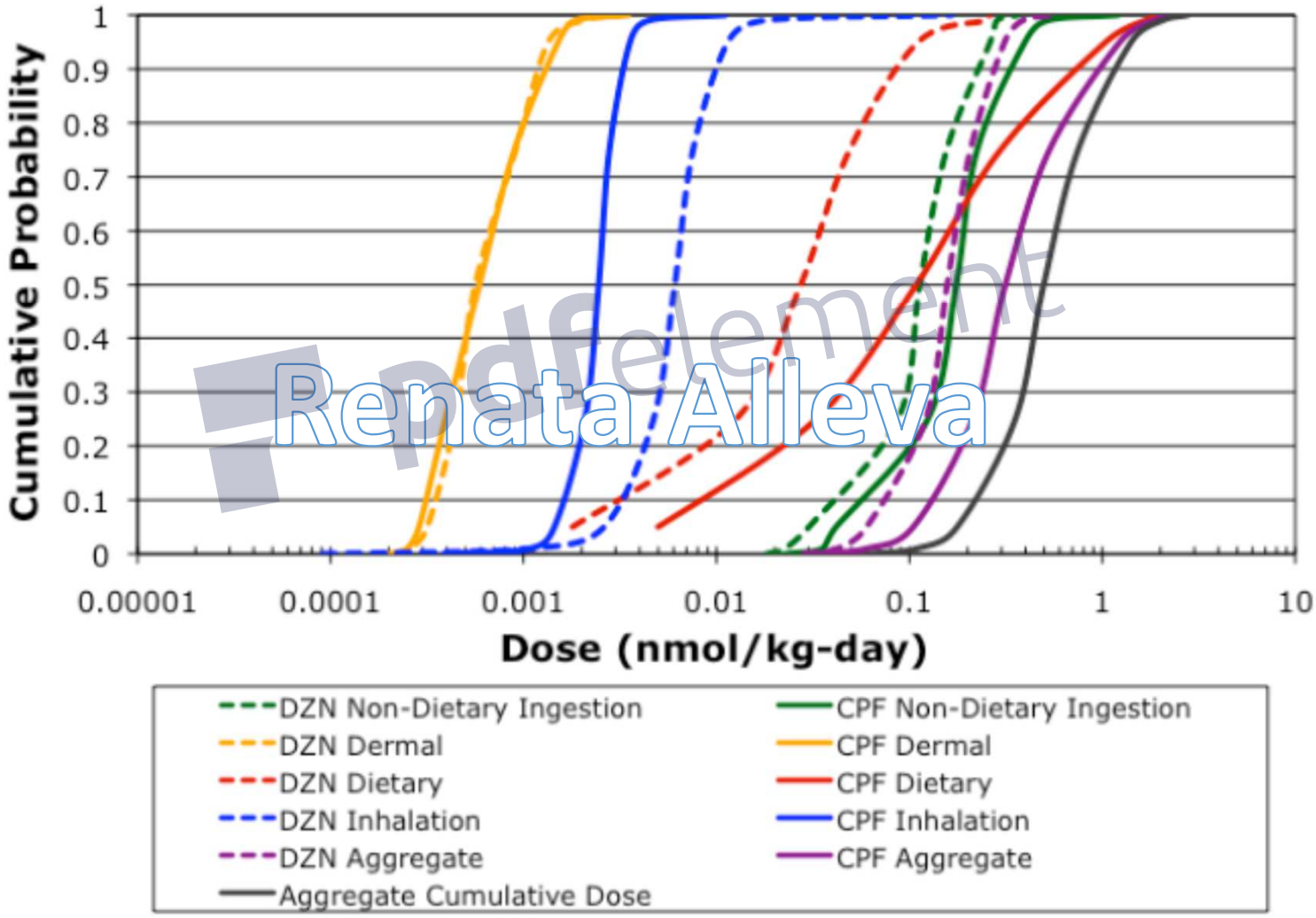
Cadmio

Gruppo 1 IARC (cancerogeno certo)

L'Esposoma



Effetto cumulativo



Alleva R.

Int. J. Environ. Res. Public Health **2012**, *9*, 73-96;

Tossicità cumulativa

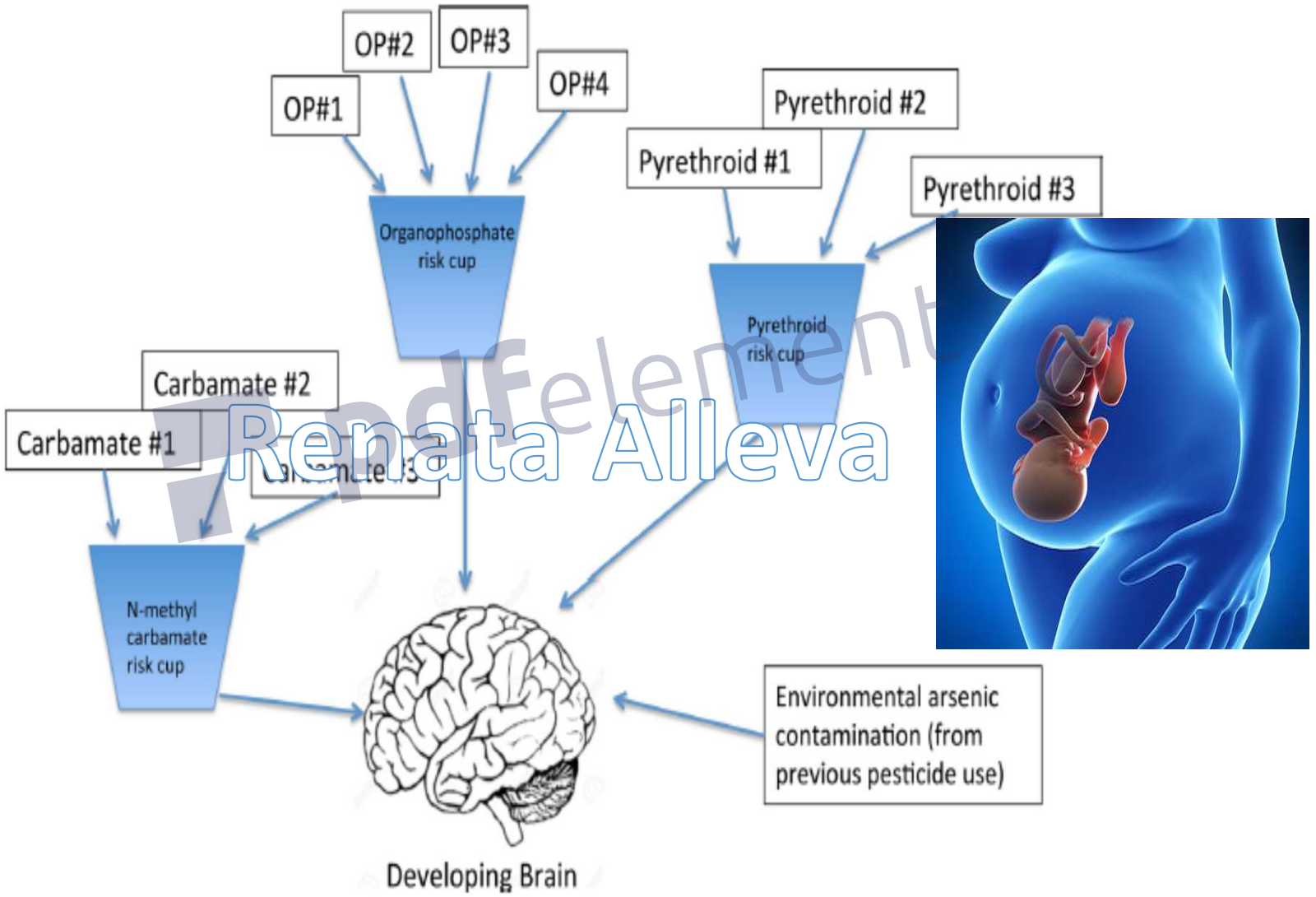


Figure 3. Current pesticide risk assessment requires aggregate and cumulative assessment by mode of action (MOA) and therefore ignores the impact of cumulative exposures to multiple compounds acting by different mechanisms to disrupt the same organ system.

INCREASED RISK OF CHILDHOOD BRAIN TUMORS AMONG CHILDREN WHOSE PARENTS HAD FARM-RELATED PESTICIDE EXPOSURES DURING PREGNANCY

Summary of results of meta-analyses of the association between pesticides and childhood brain tumors

Time period	Exposure category	Number of studies in estimate	Summary risk estimate (95% confidence interval)
Preconception	Maternal exposures	1	0.87 (0.29–2.60)
	Paternal exposures	3	2.29 (1.39–3.78)
Pregnancy	Maternal exposures (agricultural)	5	1.48 (1.18–1.84)
	Maternal exposures (non-agricultural)	7	1.36 (1.10–1.68)
	Paternal exposure	5	1.63(1.16–2.31)
Childhood	Agricultural exposures	4	1.35 (1.08–1.70)
	Non-agricultural exposures	5	1.32 (1.04–1.67)

JP J Biostat. 2014 November ; 11(2): 89–101.

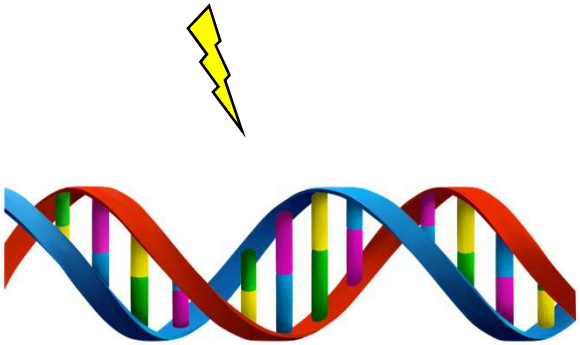
Residenti in Val di NON
Esposti a pesticidi per motivi residenziali

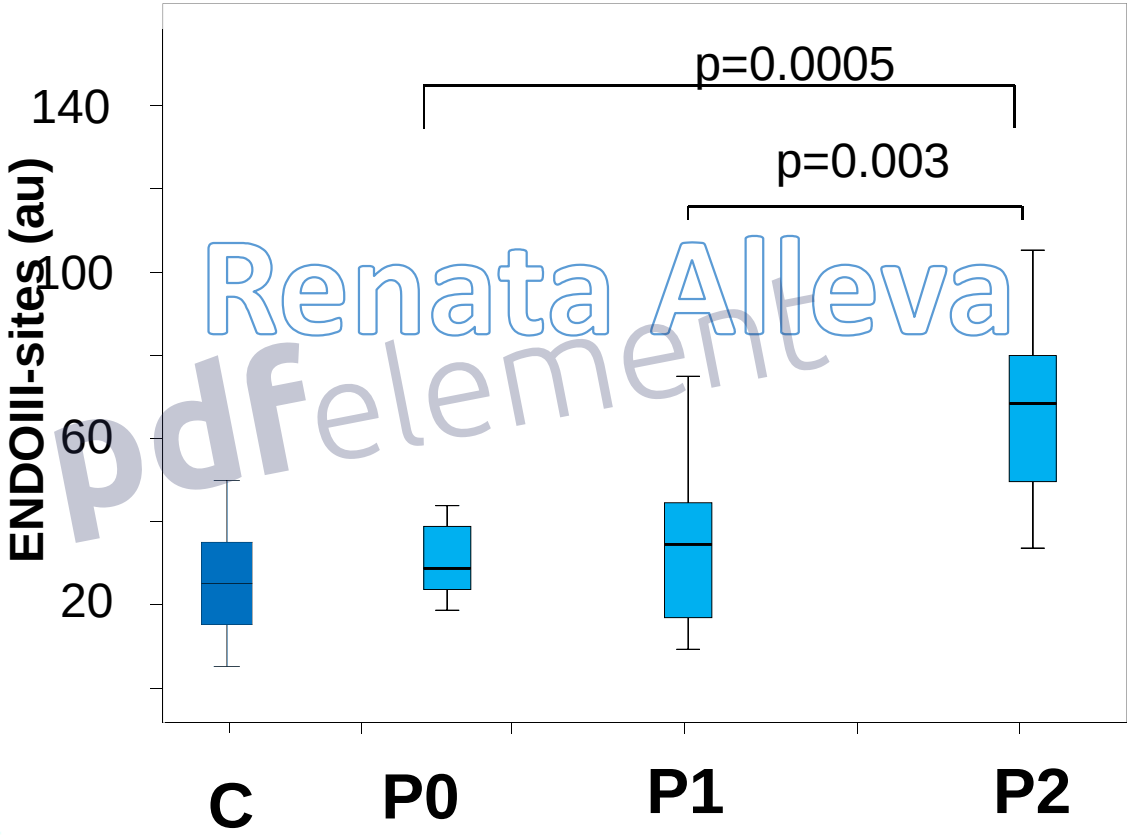
	Pesticides exposed population (n=34)			Pesticides non-exposed population (n=40)		
Demographic/anthropometric indices	mean	SD	n	mean	SD	n
Age (years)	38.8	20.4		38.9	15.5	
Gender (Male/Female)			14/20			19/21
Weight (kg)	56.3	17.5		58.3	17.5	
Height (cm)	159.7	21.0		169.7	11.0	
BMI (Kg/m^2)	21.2	2.8		22.0	2.8	
Smoking (yes/no)			6/28			9/31

Nessuno dei partecipanti allo studio ha esposizione è per motivi lavorativi (agricoltore)

Danno al DNA: basi pirimidiniche ossidate

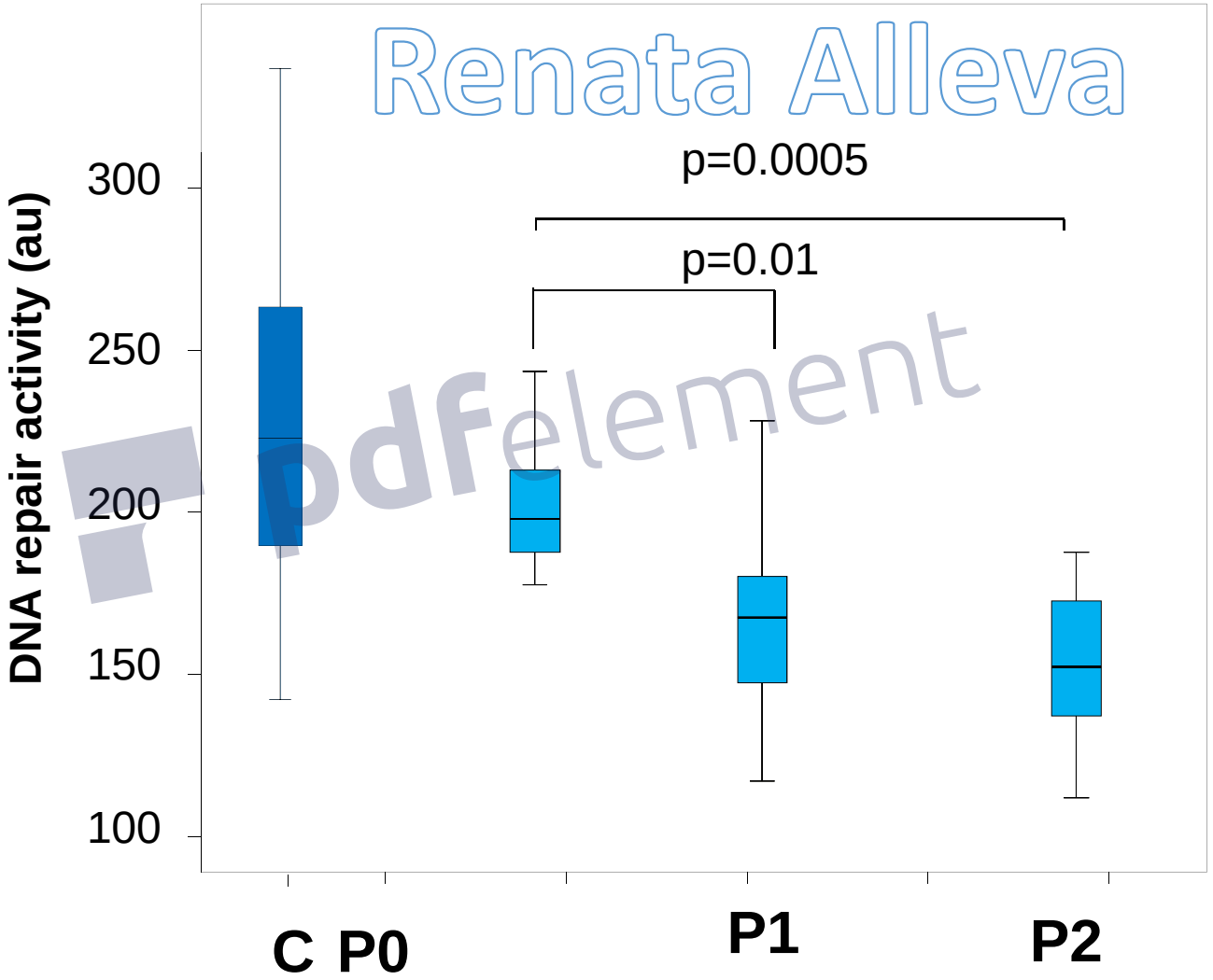
Esposizione a pesticidi





Alleva R. et al. Mol Nutr Food .Res- 2016 Apr 30

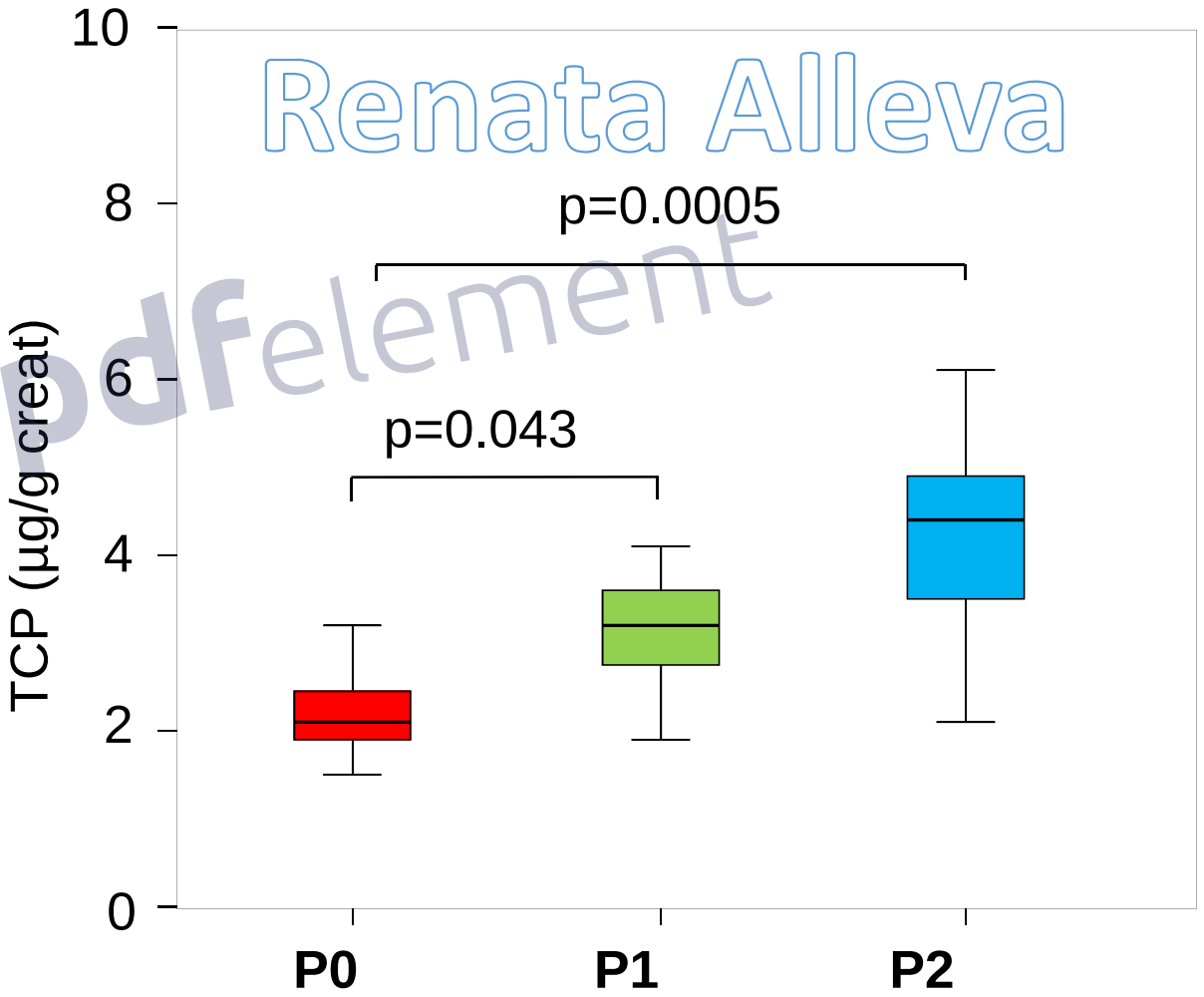
Attività di riparazione del DNA



Alleva R. et al. Mol Nutr Food .Res- 2016

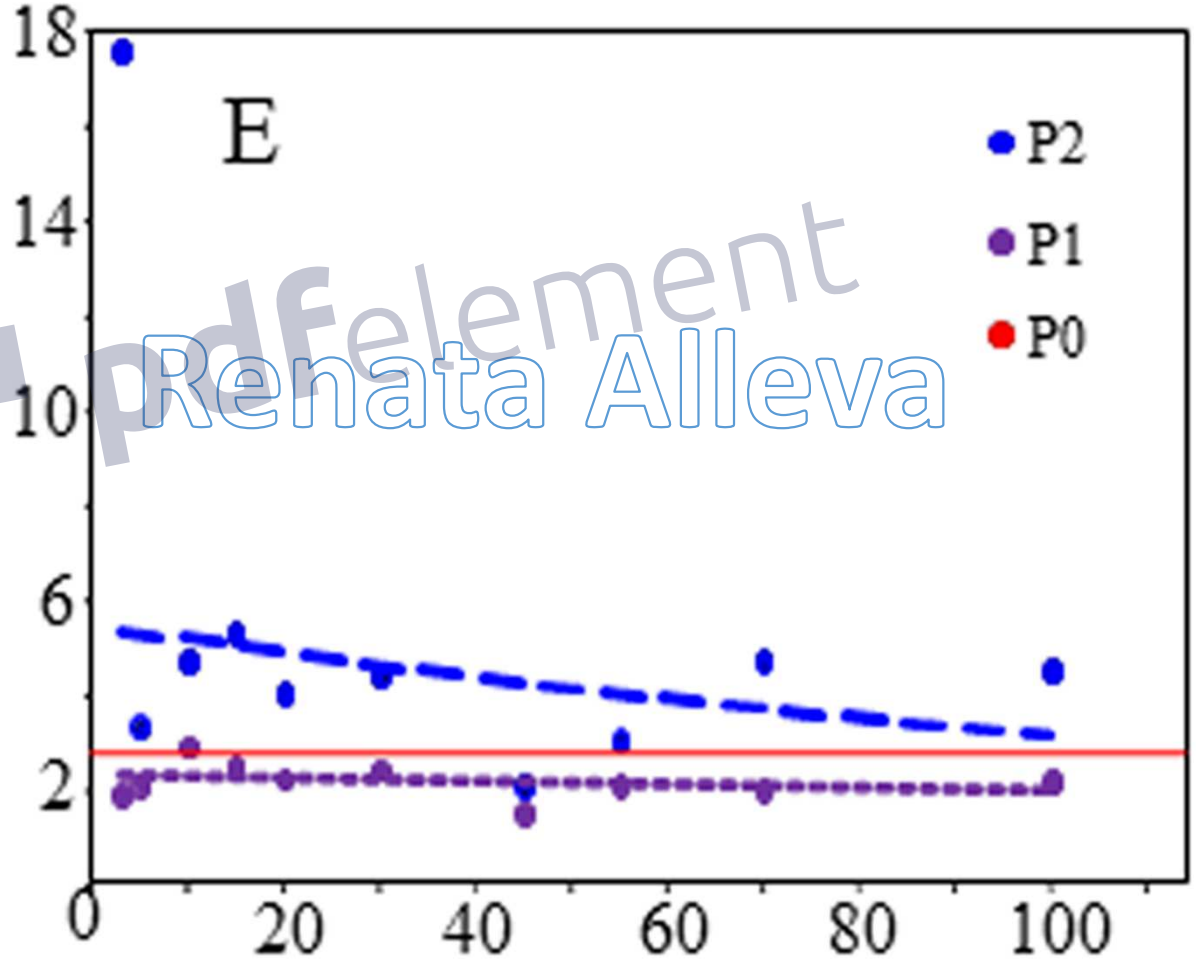
Livelli di Clorpirifos urinari

Dopo i trattamenti aumentano proporzionalmente i metaboliti dei pesticidi nelle urine.
Prova che c'è esposizione

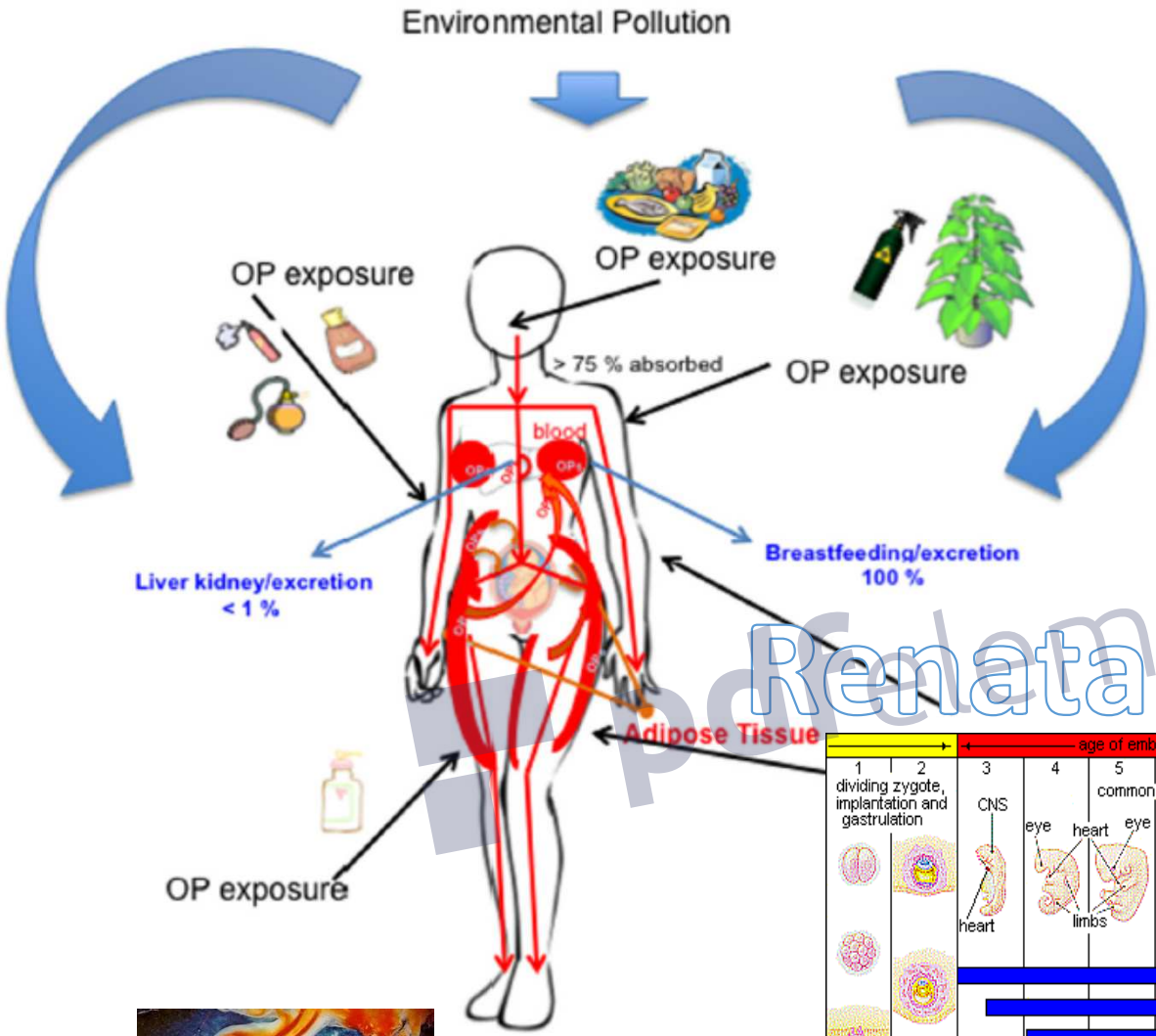


Alleva R. et al. Mol Nutr Food .Res- 2016 Apr 30

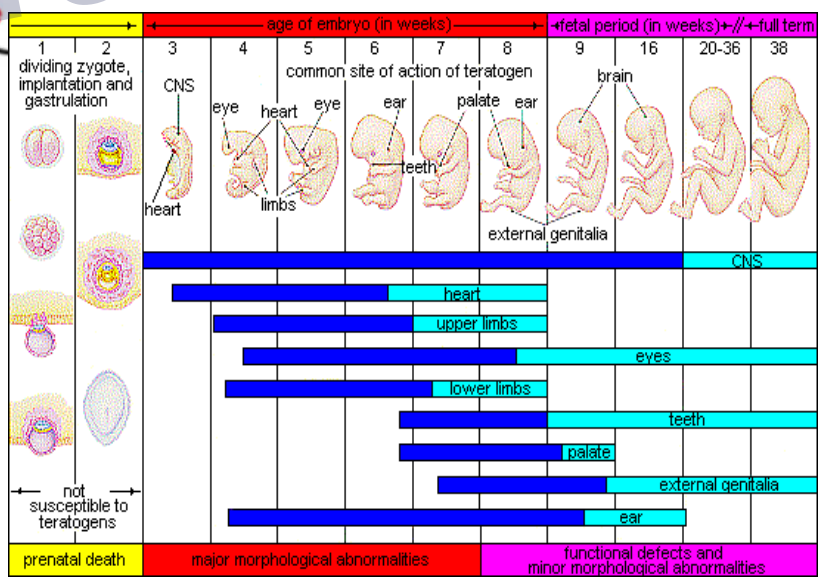
Livelli di TCP urinari e distanza delle abitazioni dai meleti



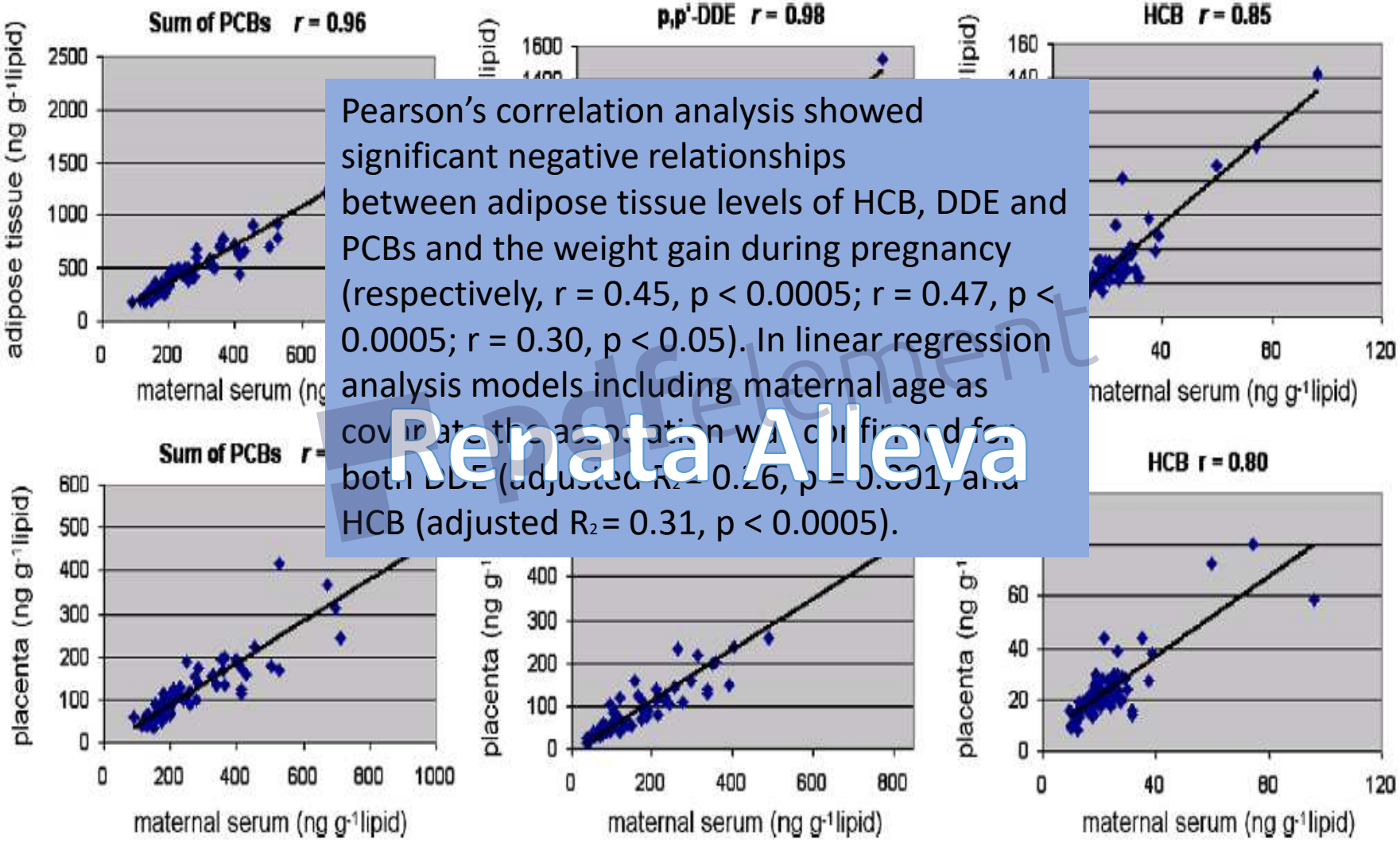
Alleva R. et al. Mol Nutr Food .Res- 2016 Apr 30



Gli inquinati lipofili accumulatisi nei tessuti materni possono passare, anche **a distanza di anni dal loro assorbimento, nel sangue** e raggiungere il **feto, o nel latte materno**



Correlazione tra livelli di organoclorurati nel siero e tessuti fetali in 70 donne



Pearson's correlation analysis showed significant negative relationships between adipose tissue levels of HCB, DDE and PCBs and the weight gain during pregnancy (respectively, r = 0.45, p < 0.0005; r = 0.47, p < 0.0005; r = 0.30, p < 0.05). In linear regression analysis models including maternal age as covariate the association was confirmed for both DDE (adjusted R_2 = 0.26, p = 0.001) and HCB (adjusted R_2 = 0.31, p < 0.0005).

Chemosphere 76 (2009) 747–754

Contents lists available at ScienceDirect

Environment International

journal homepage: www.elsevier.com/locate/envint

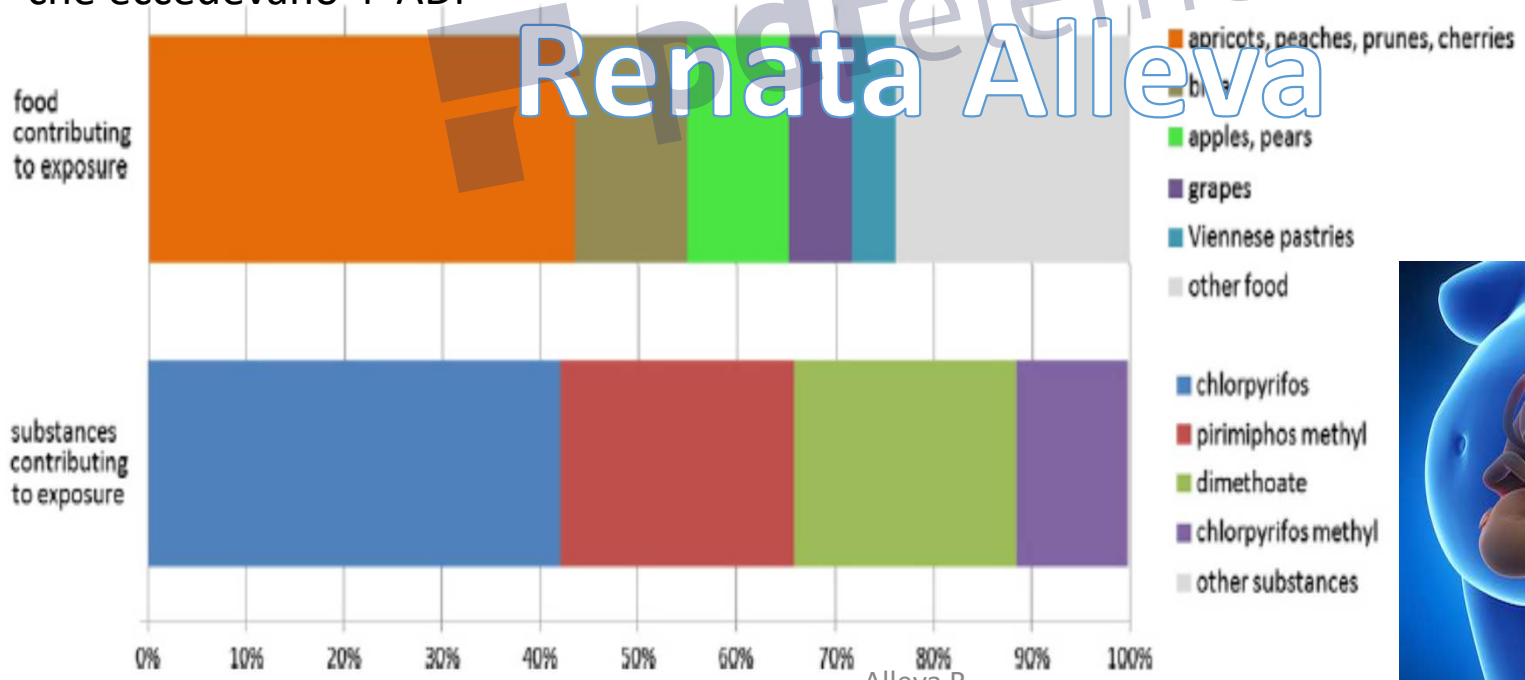
Full length article

Chronic dietary exposure to pesticide residues and associated risk in the French ELFE cohort of pregnant women

Erwan de Gavelle [a,*], Blandine de Lauzon-Guillain [b], Marie-Aline Charles [b], Cécile Chevrier [c], Marion Hulin [a], Véronique Sirot [a], Mathilde Merlo [a], Alexandre Nougadère [a]

n=14,099 donne

Valutato intake giornaliero per 317 pesticidi e caratterizzato il rischio per 14 pesticidi che eccedevano l' ADI



Tutte contaminate I risultati del test

Quattordici ragazze incinte si sono offerte volontarie per il test sulle urine. Tutte vivevano a Roma da anni, in una zona, dunque, non "a rischio". I campioni di urine sono stati raccolti in appositi contenitori sterili e spediti refrigerati al laboratorio tedesco che ha realizzato le analisi che trovate in questa pagina.

Farine

Alce Nero Farina tipo 00	Assente
Almaverde bio Farina per pizza	Assente
Barilla Farina tipo 00	Assente
Barilla Farina integrale	Assente
De Cecco Semola di grano duro	Assente
Divella Farina di grano tenero	Assente
Garofalo Farina w3	Assente
Garofalo Il buono della farina integrale senz'altro	Assente
Gran mugnaio Farina per pizza	Assente
Le terre di Ecor Farina di grano tenero	Assente
Lo Conte Farine magiche Manitoba	**0,023** mg/Kg
Lo Conte Farine magiche Pane e focaccia	Assente
Molino Rossetto Farina macinata	Assente
Molino Spadoni Farina d'America Manitoba	**0,098** mg/Kg
Naturasì Farina tipo 00	Assente
Sarchio Farina di mais	Assente

Dieta ed esposizione a pesticidi

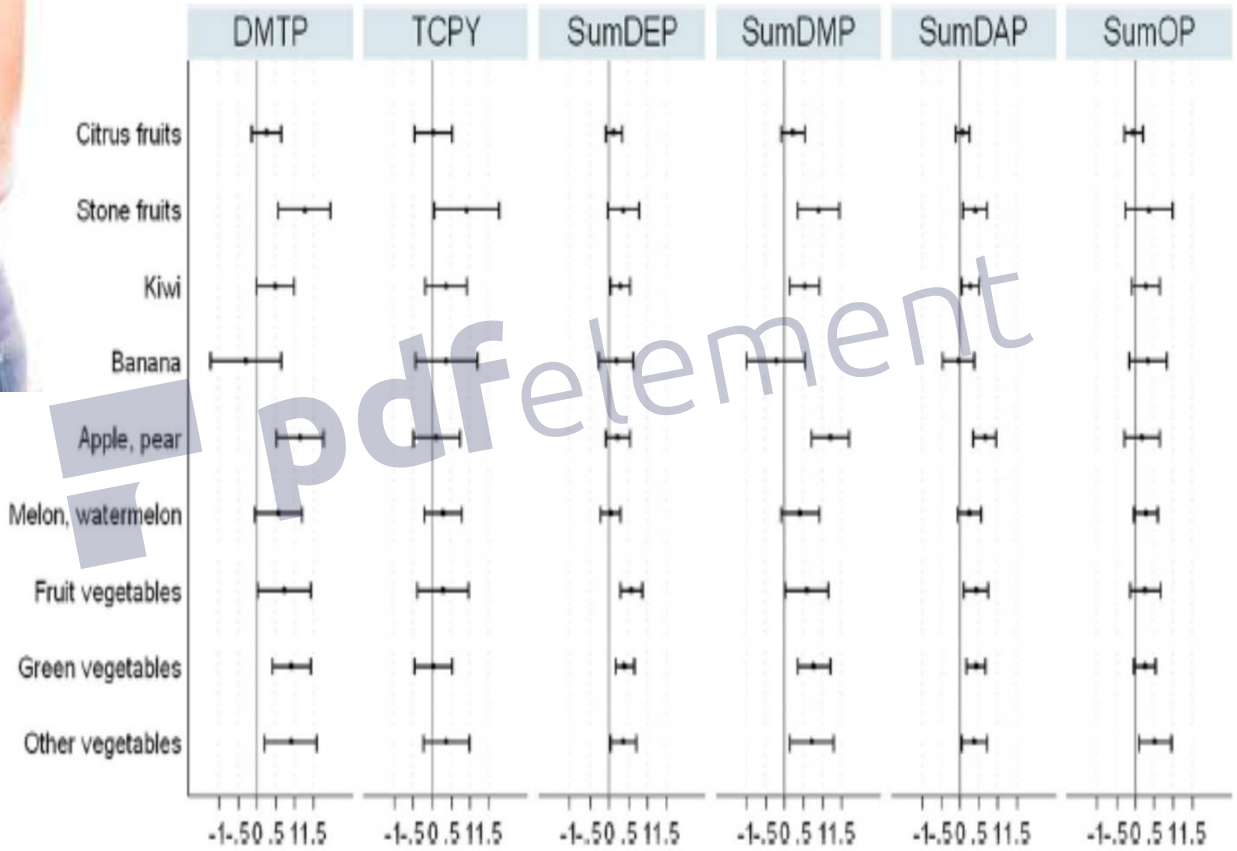
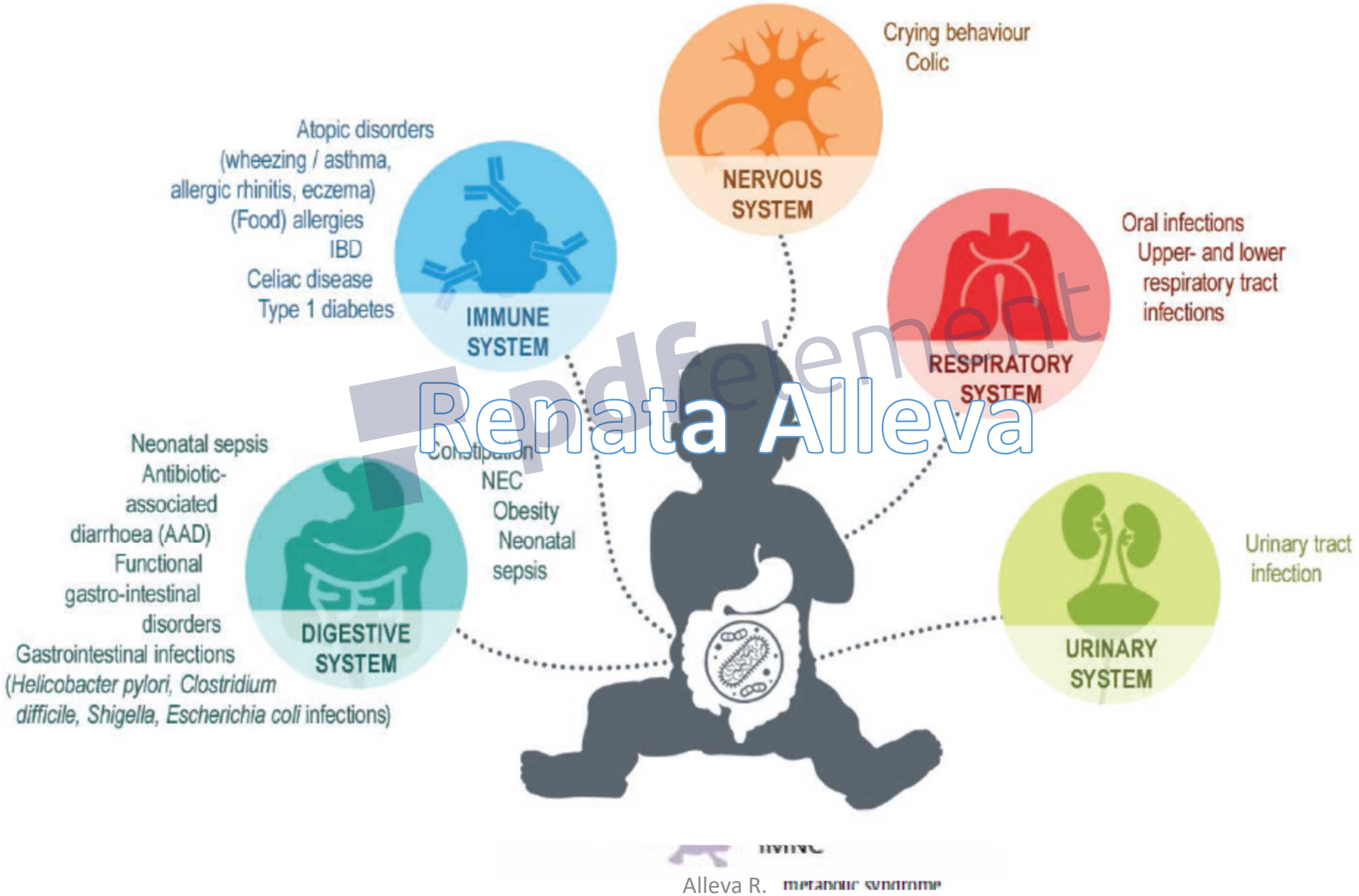


Fig. 1 Association between the intake of different types of fruits and vegetables during pregnancy and the OP concentrations. All models were adjusted by smoking habit, educational level, season of sampling, zone of residence, yard with plants at home, application of outdoor pesticides, residence near fields or greenhouses, fruit intake, vegetable intake, body mass index before pregnancy, and creatinine.

Llop *et al. Environmental Health* (2017) 16:46

Shaping of the immune system starts with the MATERNAL microbiota



Alleva R. [illegible] syndrome

Environmental Pollution222, 2017, Pages 1-9

Esposizione a Pesticidi e gravidanza

Uno studio condotto su 366 donne in gravidanza ha dimostrato che L'esposizione agli OP comporta una riduzione del periodo di gestazione di mezza settimana e riduce il peso dei neonati, effetto che può avere un forte impatto sulla salute futura

La perdita di peso alla nascita causata dall'esposizione ai pesticidi OP è comparabile a quella che si osserva nelle **fumatrici**

Difetti del tubo neurale e difetti fetali

Environ Health Perspect. 2012 July; 120(7): 1055–1060.

Mamme inquinate: sostanze pericolose in tutte le gestanti

Uno studio americano segnala che nel corpo del 99% delle donne in gravidanza ci sono sostanze nocive che possono essere trasmesse al feto.

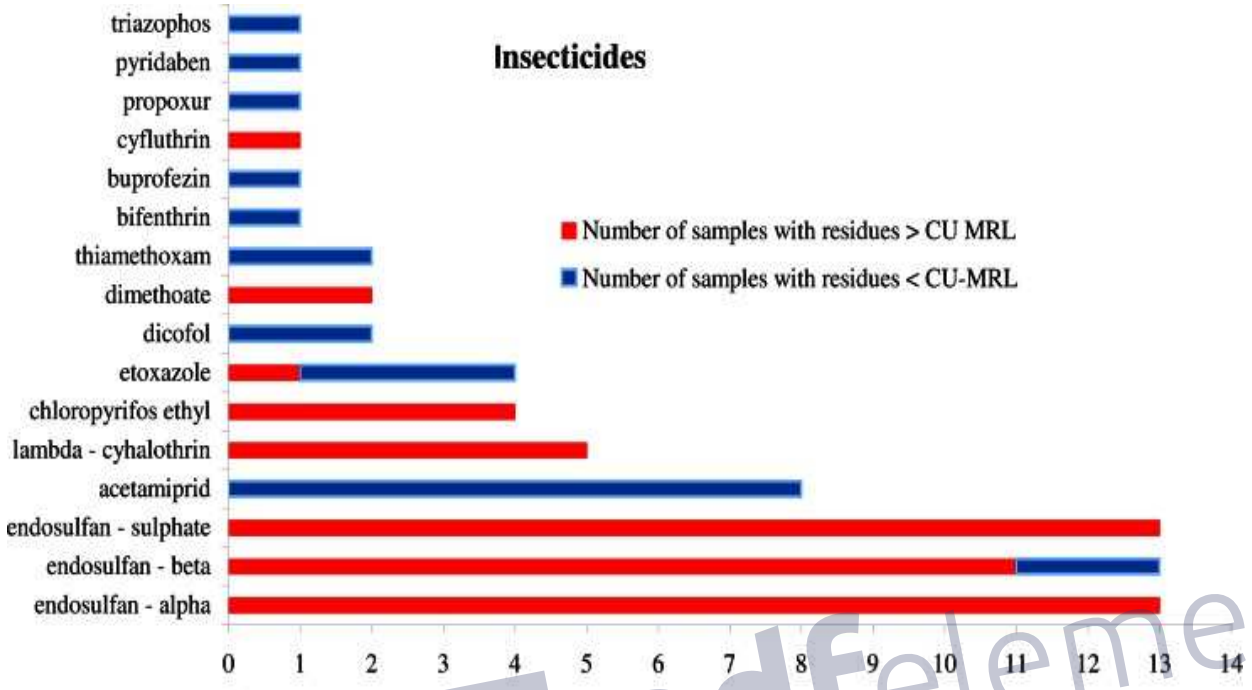
Difetti di sviluppo nel feto e problemi alla nascita.

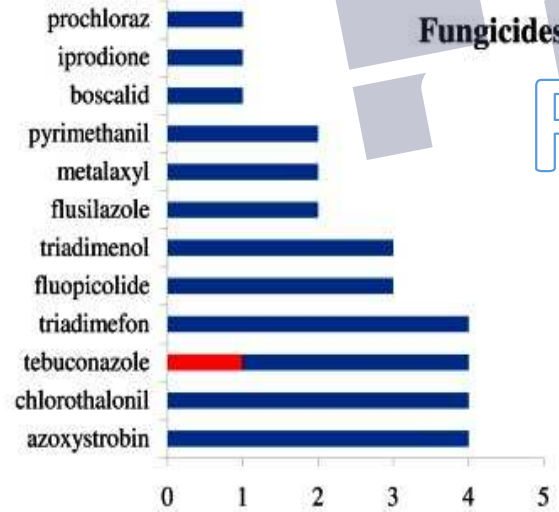
Environ Health Perspect. 2013 Oct 22.**Urinary Metabolites of Organophosphate and Pyrethroid Pesticides and Behavioral Problems in Canadian Children.**

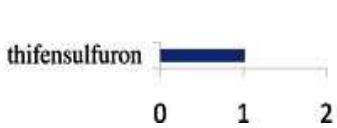
Attività estrogenica di frutta e verdura

- Attività estrogenica in relazione a residui di pesticidi nella frutta e verdura calcolando il 17B-estradiolo equivalente (EQQ) in MCF-7 BUS
- Dei 24 campioni di frutta e verdura 14 contenevano da 1 a 4 tipi di pesticidi (0,02-1,19ppm LMR) 10 campioni non contenevano pesticidi thiabendazole, fenhexamid,and chlorpyrifos
- Correlazione tra attività estrogenica e residui di pesticidi, mentre nessuna correlazione è stata trovata tra fitoestrogeni naturali e attività estrogenica

T. Schiliro et al. / Food and Chemical Toxicology 62 (2013) 82–90







I prodotti biologici sono protettivi?

Alleva R.

Reduction in urinary organophosphate pesticide metabolites in adults after a week-long organic diet ☆

Liza Oates [a,*], Marc Cohen [a], Lesley Braun [b,1], Adrian Schembri [c], Rilka Taskova [d]

[a] School of Health Sciences, Wellness Group, RMIT University; PO Box 71, Bundoora, Victoria 3083, Australia
[b] Centre of Ethics in Medicine and Society, Department of Medicine, Monash University; Pharmacy Department, The Alfred Hospital, Melbourne, Australia
[c] CogState Limited, Melbourne, Australia
[d] AsureQuality Laboratories, Wellington, New Zealand

DAP results for individual metabolites (creatinine corrected μg/g) $N=13$.

Metabolite	Maximum (μg/g)		Mean (standard deviation) (μg/g)		Sig[a]
	Con[b]	Org[c]	Con[b]	Org[c]	
DMP	23	ND [d] (0.21)[e]	3.9 (6.7)	ND [d] (–)	0.028*
DEP	12	7.4	4.8 (4.5)	2.8 (2.6)	0.221
DMTP	160	8.5	29 (48)	0.98 (2.3)	0.005*
DETP	10	3.6	1.8 (3.4)	0.56 (0.97)	0.263
DMDTP	14	3.7	2.3 (3.9)	0.35 (1.0)	0.051**
DEDTP	0.33	NQ[f] (0.22)[e]	0.12 (1.2)	0.068 (0.046)	0.144

Urinary Biomarkers of Prenatal Atrazine Exposure and Adverse Birth Outcomes in the PELAGIE Birth Cohort

Cécile Chevrier,[1,2] Gwendolina Limon,[3] Christine Monfort,[1,2] Florence Rouget,[1,2,4] Ronan Garlantézec,[1,2,5] Claire Petit,[1,2] Gaël Durand,[3] and Sylvaine Cordier[1,2]

[1]INSERM, U625, Rennes, France; [2]University of Rennes I, IFR140, Rennes, France; [3]Idhesa, Plouz[illegible]nce; [4]"Bien naître en Ille-et-Vilaine" Perinatal Network, Rennes, France; [5]Public Health Department, Hospital University, Brest, France

Background: Despite evidence of atrazine toxicity in developing organisms from experimental studies, few studies—and fewer epidemiologic investigations—have examined the potential effects of prenatal exposure.

Objectives: We assessed the association between adverse birth outcomes and urinary biomarkers of prenatal atrazine exposure, while taking into account exposures to other herbicides used on corn crops (simazine, alachlor, metolachlor, and acetochlor).

Methods: This study used a case-cohort design nested in a prospective birth cohort conducted in the Brittany region of France from 2002 through 2006. We collected maternal urine samples to examine pesticide exposure biomarkers before the 19th week of gestation.

Results: We found quantifiable levels of atrazine or atrazine mercapturate in urine samples from 5.5% of 579 pregnant women, and dealkylated and identified hydroxylated triazine metabolites in 20% and 40% of samples, respectively. The presence versus absence of quantifiable levels of [illegible]e or a specific atrazine metabolite was associated with fetal growth restriction [odds ratio (OR) = [illegible]5; 95% confidence interval (CI), 1.0–2.2] and small head circumference for sex and gestational age (OR = 1.7; 95% CI, 1.0–2.7). Associations with major congenital anomalies were not evident with atrazine or its specific metabolites. Head circumference was inversely associated with the presence of quantifiable urinary metolachlor.

Conclusions: This study is the first to assess associations of birth outcomes with multiple urinary biomarkers of exposure to triazine and chloroacetanilide herbicides. Evidence of associations with adverse birth outcomes raises particular concerns for countries where atrazine is still in use.

Key words: atrazine, environmental exposure, fetal growth, herbicides. *Environ Health Perspect* 119:1034–1041 (2011). doi:10.1289/ehp.1002775 [Online 2 March 2011]

Association Between Organic Dietary Choice During Pregnancy and Hypospadias in Offspring: A Study of Mothers of 306 Boys Operated on for Hypospadias

Jeppe Schultz Christensen, Camilla Asklund, Niels E. Skakkebæk, Niels Jørgensen, Helle Raun Andersen, Troels Munch Jørgensen, Lars Henning Olsen, Anette Pernille Høyer, Jan Moesgaard, Jørgen Thorup and Tina Kold Jensen

Associazione tra consumo di latticini soprattutto di origine non biologica nella dieta della gestante e ipospadia del bambino

Tal associazione sembra legata alle contaminazioni di pesticidi del formaggio

Table 3. *Combined choice of organic alternative to nonmilk dairy products during pregnancy and current maternal consumption of butter and cheese*

Choice of Organic Alternative to Nonmilk Dairy Products During First Trimester	Current Daily Consumption of Butter + Cheese	No. Cases (%)	No. Controls (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Often/Sometimes	Both less than 1	20 (6.6)	37 (12.1)	Reference	Reference
	Butter or cheese 1 or more	39 (12.9)	40 (13.1)	1.80 (0.90–3.63)	1.84 (0.90–3.77)
	Both 1 or more	29 (9.6)	38 (12.4)	1.41 (0.68–2.92)	1.35 (0.64–2.84)
Rarely/Never	Both less than 1	52 (17.2)	53 (17.3)	1.82 (0.93–3.53)	1.68 (0.85–3.34)
	Butter or cheese 1 or more	110 (36.4)	97 (31.7)	2.10 (1.14–3.86)	1.87 (1.01–3.48)
	Both 1 or more	52 (17.2)	41 (13.4)	2.35 (1.19–4.64)	2.18 (1.09–4.36)

Alimenti biologici e Ipospadia

Seventy-four male newborns were diagnosed with hypospadias (0.2%) and 151 with cryptorchidism (0.4%). Women who consumed any organic food during pregnancy were less likely to give birth to a boy with hypospadias (OR=0.42; 95% CI: 0.25, 0.70 based on 21 exposed cases) than women who reported they never or seldom consumed organic food. Associations with specific organic foods were strongest for vegetable (OR=0.36; 95% CI: 0.15, 0.85; 10 exposed cases) and milk/dairy (OR=0.43; 95% CI: 0.17, 1.07; 7 exposed cases) consumption.

Associazione tra consumo di una dieta basata su prodotti biologici e rischio di pre-eclampsia in 28192 gestanti (FFQ)

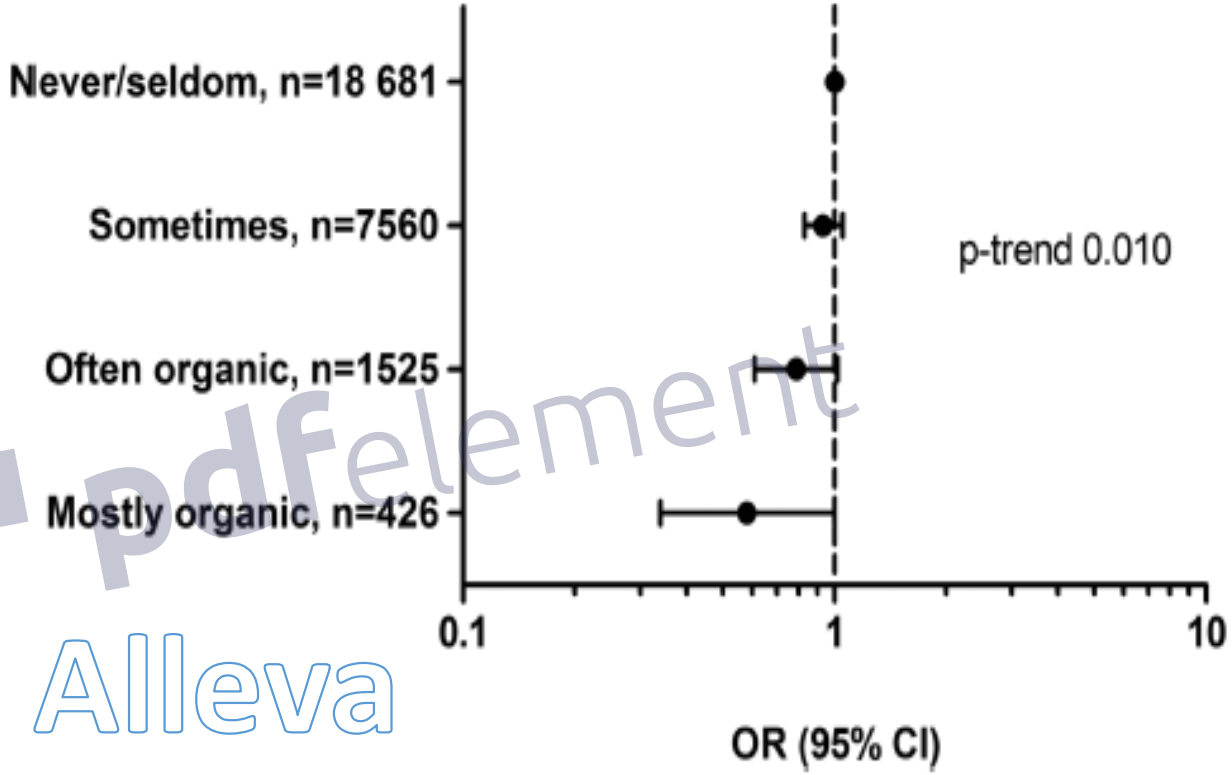


Figure 2 Associations (ORs and 95% CIs) between reported consumption of organic vegetables and pre-eclampsia among 28 192 pregnant women in the Norwegian Mother and Child Cohort Study 2002–2008.

from the prospective Norwegian Mother and Child Cohort Study

Hanne Torjusen,[1,2] Anne Lise Brantsæter,[2] Margaretha Haugen,[2] Jan Alexander,[3] Leiv S Bakketeig,[4] Geir Lieblein,[5] Hein Stigum,[6] Tormod Næs,[6,7] Jackie Swartz,[8,9] Gerd Holmboe-Ottesen,[10] Gun Roos,[2] Helle Margrete Meltzer[2]

RESEARCH ARTICLE | OPEN ACCESS | OPEN PEER REVIEW

Food patterns and dietary quality associated with organic food consumption during pregnancy; data from a large cohort of pregnant women in Norway

Hanne Torjusen , Geir Lieblein, Tormod Næs, Margaretha Haugen, Helle Margrete Meltzer and Anne Lise Brantsæter

BMC Public Health 2012 **12**:612 | https://doi.org/10.1186/1471-2458-12-612

Received: 10 June 2011 | **Accepted:** 28 July 2012 | **Published:** 6 August 2012

The present study showed that pregnant Norwegian women reporting frequent consumption of organically produced food had a dietary pattern and quality more in line with public advice for healthy and sustainable diets. A methodological implication is that the overall diet needs to be included in future studies of potential health outcomes related to consumption of organic food during pregnancy.

Prodotti Biologici: e dal punto di vista nutrizionale?

Alleva R.

Agron. Sustain. Dev. 30 (2010) 33–41
© INRA, EDP Sciences, 2010
DOI: 10.1051/agro/2009019

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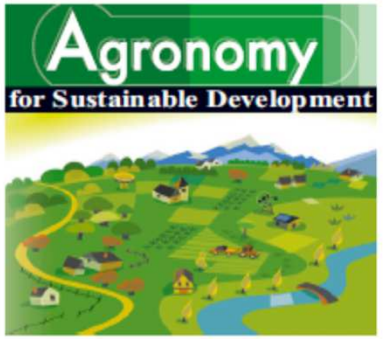


Review article

Nutritional quality and safety of organic food. A review

Denis LAIRON*

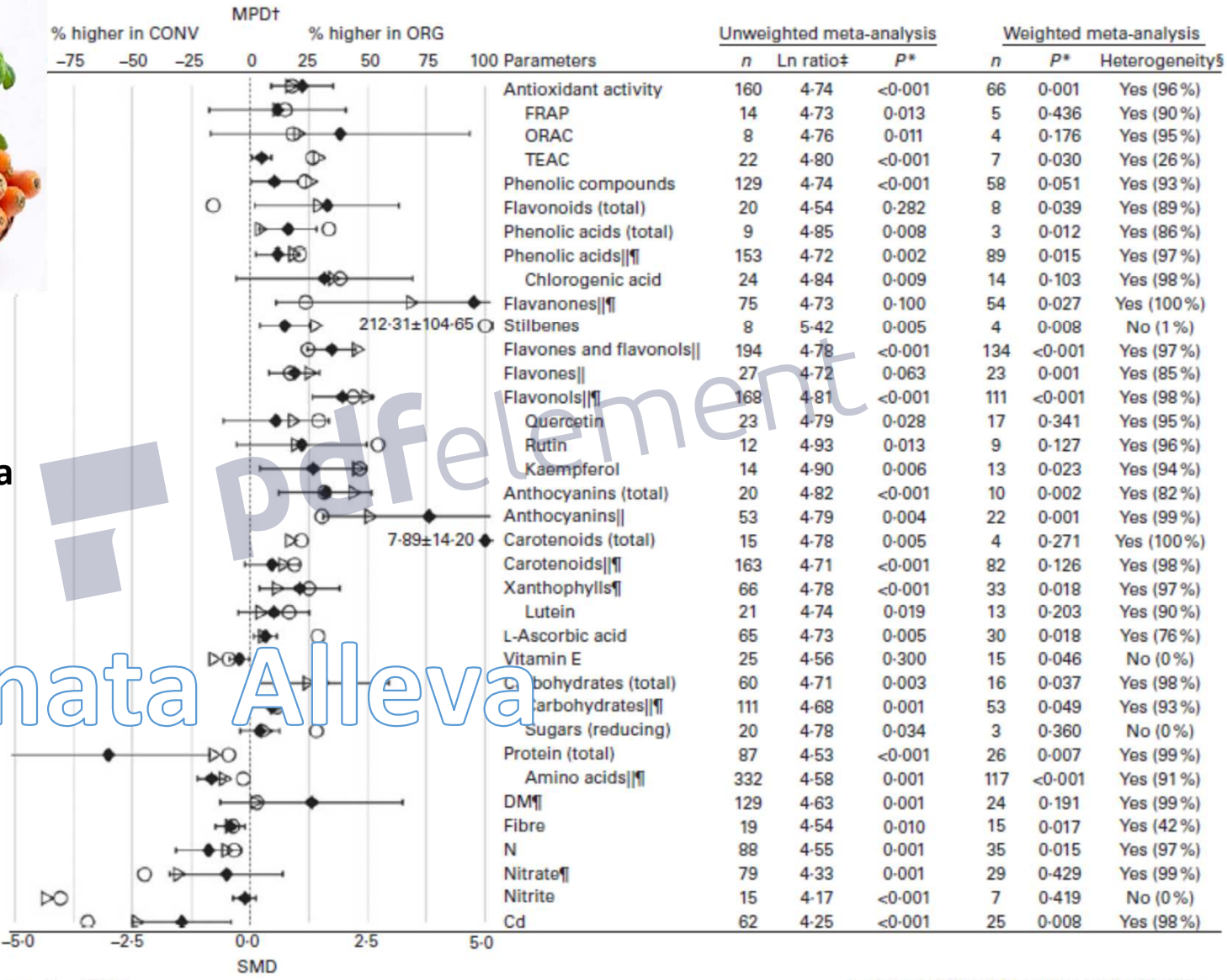
Increased contents	Reduced contents	Comparable contents
Dry matter in vegetables	Pesticide residues in all food (mostly absent)	Mycotoxins in cereals & milk
Some minerals (iron, magnesium) in vegetables	Nitrates in vegetables	Most minerals in fruit, vegetables & cereals
Anti-oxidants in crops: Vitamin C (potatoes) Polyphenols in fruit & vegetables, Salicylic acid in vegetables		Beta-carotene in fruit & vegetables
Polyunsaturated fatty acids in meat and milk	Saturated fatty acids in meat	
Most nutrients in wholegrain organic cereals and derivatives	Protein content in grains	

343 Lavori

Minore contaminazione da Cadmio

Minore residui di pesticidi

20-60% in più di sostanze polifenoliche nei prodotti biologici



Parameters	Unweighted meta-analysis n	Ln ratio‡	P*	Weighted meta-analysis n	P*	Heterogeneity§
Antioxidant activity	160	4·74	<0·001	66	0·001	Yes (96 %)
FRAP	14	4·73	0·013	5	0·436	Yes (90 %)
ORAC	8	4·76	0·011	4	0·176	Yes (95 %)
TEAC	22	4·80	<0·001	7	0·030	Yes (26 %)
Phenolic compounds	129	4·74	<0·001	58	0·051	Yes (93 %)
Flavonoids (total)	20	4·54	0·282	8	0·039	Yes (89 %)
Phenolic acids (total)	9	4·85	0·008	3	0·012	Yes (86 %)
Phenolic acids‖¶	153	4·72	0·002	89	0·015	Yes (97 %)
Chlorogenic acid	24	4·84	0·009	14	0·103	Yes (98 %)
Flavanones‖¶	75	4·73	0·100	54	0·027	Yes (100 %)
Stilbenes	8	5·42	0·005	4	0·008	No (1 %)
Flavones and flavonols‖	194	4·78	<0·001	134	<0·001	Yes (97 %)
Flavones‖	27	4·72	0·063	23	0·001	Yes (85 %)
Flavonols‖¶	168	4·81	<0·001	111	<0·001	Yes (98 %)
Quercetin	23	4·79	0·028	17	0·341	Yes (95 %)
Rutin	12	4·93	0·013	9	0·127	Yes (96 %)
Kaempferol	14	4·90	0·006	13	0·023	Yes (94 %)
Anthocyanins (total)	20	4·82	<0·001	10	0·002	Yes (82 %)
Anthocyanins‖	53	4·79	0·004	22	0·001	Yes (99 %)
Carotenoids (total)	15	4·78	0·005	4	0·271	Yes (100 %)
Carotenoids‖¶	163	4·71	<0·001	82	0·126	Yes (98 %)
Xanthophylls¶	66	4·78	<0·001	33	0·018	Yes (97 %)
Lutein	21	4·74	0·019	13	0·203	Yes (90 %)
L-Ascorbic acid	65	4·73	0·005	30	0·018	Yes (76 %)
Vitamin E	25	4·56	0·300	15	0·046	No (0 %)
Carbohydrates (total)	60	4·71	0·003	16	0·037	Yes (98 %)
Carbohydrates‖¶	111	4·68	0·001	53	0·049	Yes (93 %)
Sugars (reducing)	20	4·78	0·034	3	0·360	No (0 %)
Protein (total)	87	4·53	<0·001	26	0·007	Yes (99 %)
Amino acids‖¶	332	4·58	0·001	117	<0·001	Yes (91 %)
DM¶	129	4·63	0·001	24	0·191	Yes (99 %)
Fibre	19	4·54	0·010	15	0·017	Yes (42 %)
N	88	4·55	0·001	35	0·015	Yes (97 %)
Nitrate¶	79	4·33	0·001	29	0·429	Yes (99 %)
Nitrite	15	4·17	<0·001	7	0·419	No (0 %)
Cd	62	4·25	<0·001	25	0·008	Yes (98 %)

British Journal of Nutrition, page 1 of 18 doi:10.1017/S0007114514001366

Acidi grassi (%)	Convenzionale	Biologico
somma omega 6	21,8	17,3
somma omega 3	2,4	3,6
omega 6 / omega 3	9,1	4,8

Alleva R.

La produzione di carne di pollo in Italia è stata pari a 1.296.400 tonnellate, con un consumo pro capite di 19,85 kg.

Il 99% del pollo mangiato in Italia proviene da allevamenti intensivi e *oltre il 95% dei polli italiani è allevato in sistemi intensivi.*

Negli allevamenti intensivi, i polli crescono fino a 90 grammi al giorno, raggiungendo il peso di macellazione in appena 39-42 giorni (in altri sistemi di allevamento i polli vivono oltre gli 80 giorni)

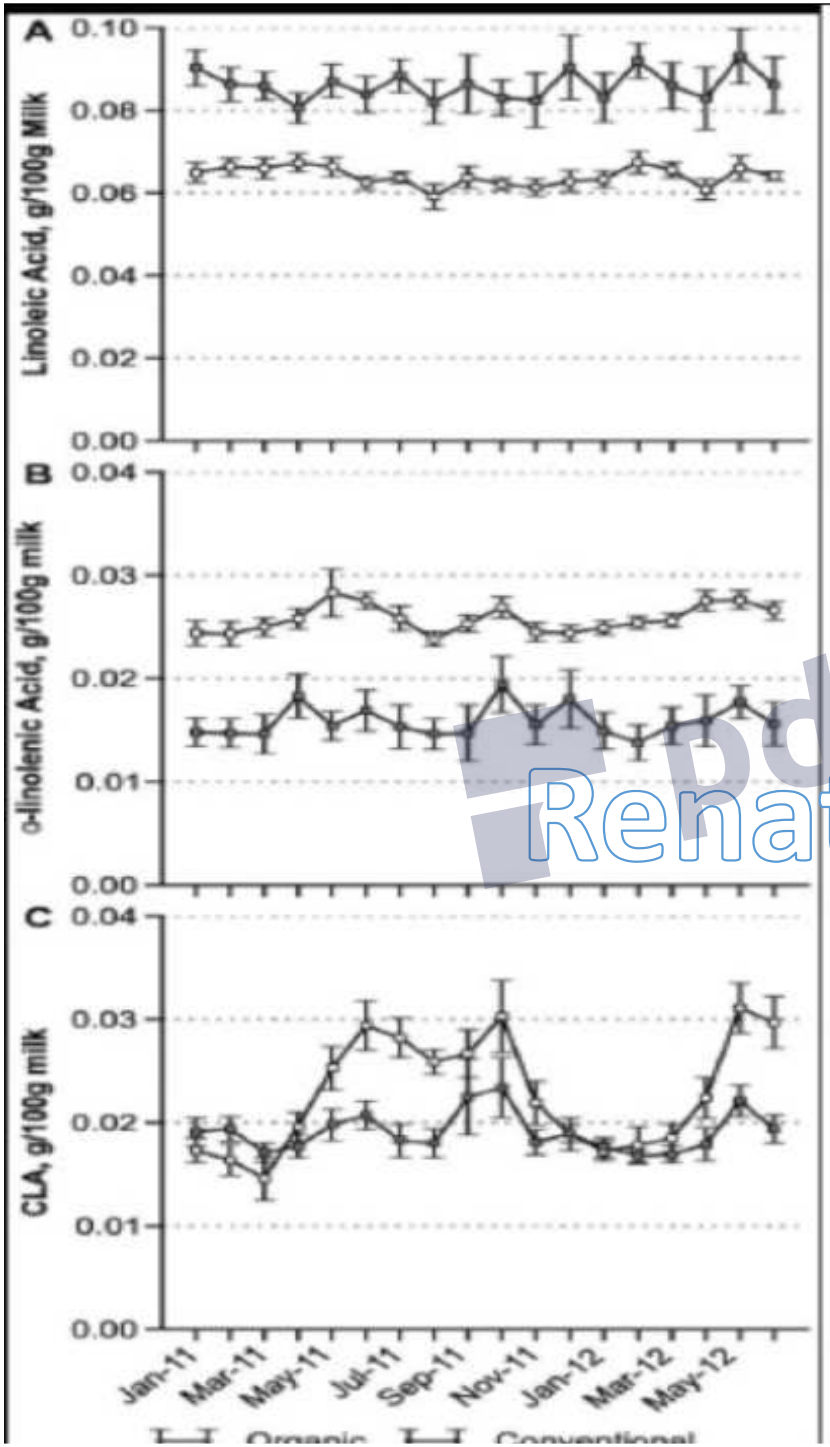
British Journal of Nutrition (2016), **115**, 994–1011 doi:10.1017/S0007114515005073

Composition differences between organic and conventional meat: a systematic literature review and meta-analysis

Table 2. Estimated fatty acids (mg/person per d) intake from organic (ORG) and conventional (CONV) meat based on FAO's fat supply quantity data[42] for bovine meat, pig meat, sheep and goat meat and poultry meat in the European Union, calculated using the data included in the unweighted meta-analysis shown in Fig. 2

	Consumption associated with														
	Beef*			Lamb and goat meat†			Pork‡			Chicken meat§			Total meat		
Parameters	ORG	CONV	MPD	ORG	CONV	MPD	ORG	CONV	MPD	ORG	CONV	MPD	ORG	CONV	MPD
SFA	1518	1507	1	527	528	0	6648	6868	−3	1408	1419	−1	10 100	10 322	−2
14 : 0 (myristic acid)	59	66	−12	60	61	−2	217	252	−16	27	41	−50	363	420	−16
16 : 0 (palmitic acid)	709	715	−1	252	254	−1	4238	4368	−3	993	999	−1	6191	6337	−2
MUFA	1307	1395	−7	406	414	−2	8229	8417	−2	1587	1858	−17	11 528	12 083	−5
PUFA	525	455	15	142	132	8	2930	2561	14	1482	1200	24	5080	4348	17
n-3 PUFA	128	78	64	41	40	2	419	360	16	161	136	19	748	613	22
n-6 PUFA	290	277	5	94	95	−1	4400	3637	21	1396	1100	27	6180	5110	21

MPD, mean percentage difference



Milk nutritional quality

Benbrook 2013 PLoS One e82429

Tsiplakou E2010 J Dairy Res. 77:343-.
Differences in sheep and goats milk fatty acid profile between conventional and organic farming

organic sheep and goats milk had lower fat content and higher content in MUFA, PUFA, alpha-LNA, CLA, n-3

Ellis KA 2006 J Dairy Sci. 89:1938-50.
Comparing the fatty acid composition of organic and conventional milk.

Organic milk had a higher proportion of PUFA and of n-3 FA and lower n-6:n-3 FA ratio than conventional milk.

Fragole biologiche vs fragole convenzionali

- Capacità antiossidante totale più alta (8.5%)
- Maggiore concentrazione di Vitamina C (9.7%)
- Maggiori concentrazioni fenoli totali (10.5%)
- Meno fosforo (13.6%) e potassio (9.1%)
- Specifici polifenoli (quercitina e acido ellagico) mostrano tendenze miste

Conclusions/Significance: Our findings show that the organic strawberry farms produced higher quality fruit and that their higher quality soils may have greater microbial functional capability and resilience to stress. These findings justify additional investigations aimed at detecting and quantifying such effects and their interactions.

OPEN ACCESS Freely available online

PLOS | ONE

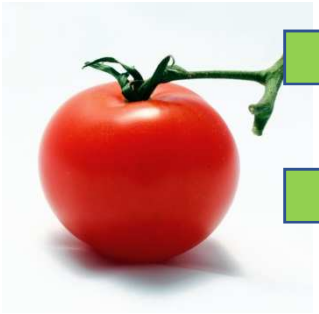
The Impact of Organic Farming on Quality of Tomatoes Is Associated to Increased Oxidative Stress during Fruit Development

Aurelice B. Oliveira[1], Carlos F. H. Moura[2], Enéas Gomes-Filho[1], Claudia A. Marco[3], Laurent Urban[4], Maria Raquel A. Miranda[1]*

1 Universidade Federal do Ceará, Depto. Bioquímica e Biologia Molecular, Fortaleza-CE, Brazil, 2 Embrapa Agroindustria Tropical, Fortaleza-CE, Brazil, 3 Universidade Federal do Ceará, Campus do Cariri, Av. Tenente Raimundo Rocha s/n - Cidade Universitária, Juazeiro do Norte-CE, Brazil, 4 Université d'Avignon et des Pays de Vaucluse, Campus Agroparc, Avignon, France

Lo stress ossidativo giova al pomodoro BIO. Questo accade probabilmente perché, non avendo il supporto di pesticidi ed erbicidi, la pianta deve mettere **in campo i propri meccanismi di difesa, e questo causa stress.** Non si tratta però di un fenomeno negativo perché si traduce in un accumulo di antiossidanti e di materia solida solubile, caratteristiche ottime dal punto di vista nutrizionale.

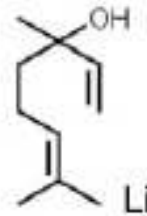
Parametri qualitativi tra pomodori di agricoltura convenzionale e agricoltura biologica



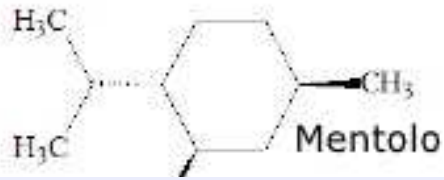
Tomato			
Parameters	**Stage**	**OG**	**CV**
Weight (g)	Immature	67.10±12.40 Bb	103.02±15.53 Ab
	Mature	84.88±26.40 Ba	131.52±22.29 Aa
	Ripe	75.15±7.24 Bab	124.93±41.85 Aa
Width (cm)	Immature	4.68±0.33 Bab	5.16±0.51 Aa
	Mature	5.14±0.82 Aa	5.58±0.55 Aa
	Ripe	4.20±0.37 Bb	5.46±0.83 Aa
pH	Immature	4.36±0.06 Ba	4.53±0.07 Aa
	Mature	4.46±0.06 Aa	4.43±0.04 Aa
	Ripe	4.39±0.10 Aa	4.50±0.07 Aa
TA (% citric acid)	Immature	0.33±0.01 Ab	0.28±0.02 Ba
	Mature	0.25±0.00 Ac	0.28±0.03 Aa
	Ripe	0.36±0.00 Aa	0.28±0.00 Ba
SS (°Brix)	Immature	4.80±0.17 Aa	4.17±0.15 Aa
	Mature	5.03±1.06 Aab	4.20±0.10 Aa
	Ripe	6.00±0.00 Aa	3.83±0.51 Ba
Total phenolics (mg GAE.kg^{-1})	Immature	308.5±3.04 Ab	249.1±5.65 Aa
	Mature	508.3±1.51 Aa	299.8±2.39 Ba
	Ripe	556.5±5.40 Aa	232.5±0.62 Ba
Anthocyanins (mg. kg^{-1})	Immature	5.1±0.10 Ba	8.0±0.19 Aa
	Mature	2.5±0.05 Ba	9.0±0.16 Aa
	Ripe	3.6±0.09 Ba	9.9±0.11 Aa
Yellow Flavonoids (mg. kg^{-1})	Immature	27.8±0.15 Bb	37.4±0.33 Aa
	Mature	26.1±0.33 Bb	33.3±0.43 Aab
	Ripe	43.7±0.49 Aa	25.7±0.33 Bb
Total Vitamin C (mg.kg^{-1})	Immature	134.1±0.20 Ac	89.4±0.05 Bb
	Mature	220.5±0.12 Ab	175.3±0.20 Ba
	Ripe	264.7±0.40 Aa	170.9±0.16 Ba
Relative chlorophyll content		40.18±7.20 A	40.29±5.20 A

PlosOne
February 2013 | Volume 8 | Issue 2 | e56354

Polifenoli



Linalolo



Mentolo

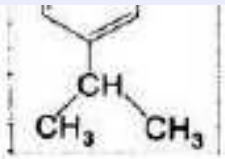
The Journal of Nutrition
Nutritional Epidemiology

High Concentrations of a Urinary Biomarker of Polyphenol Intake Are Associated with Decreased Mortality in Older Adults[1,2]

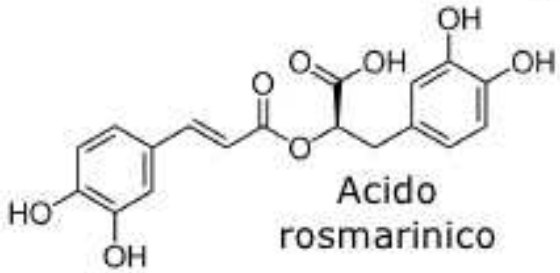
Raul Zamora-Ros,[3,4] Montserrat Rabassa,[3] Antonio Cherubini,[5,6]* Mireia Urpí-Sardà,[3] Stefania Bandinelli,[7] Luigi Ferrucci,[8] and Cristina Andres-Lacueva[3]

Ane

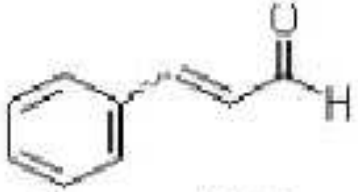
Le piante producono numerosi composti fenolici, di cui necessitano per la loro **pigmentazione – impollinazione** e **difesa dai predatori e patogeni**



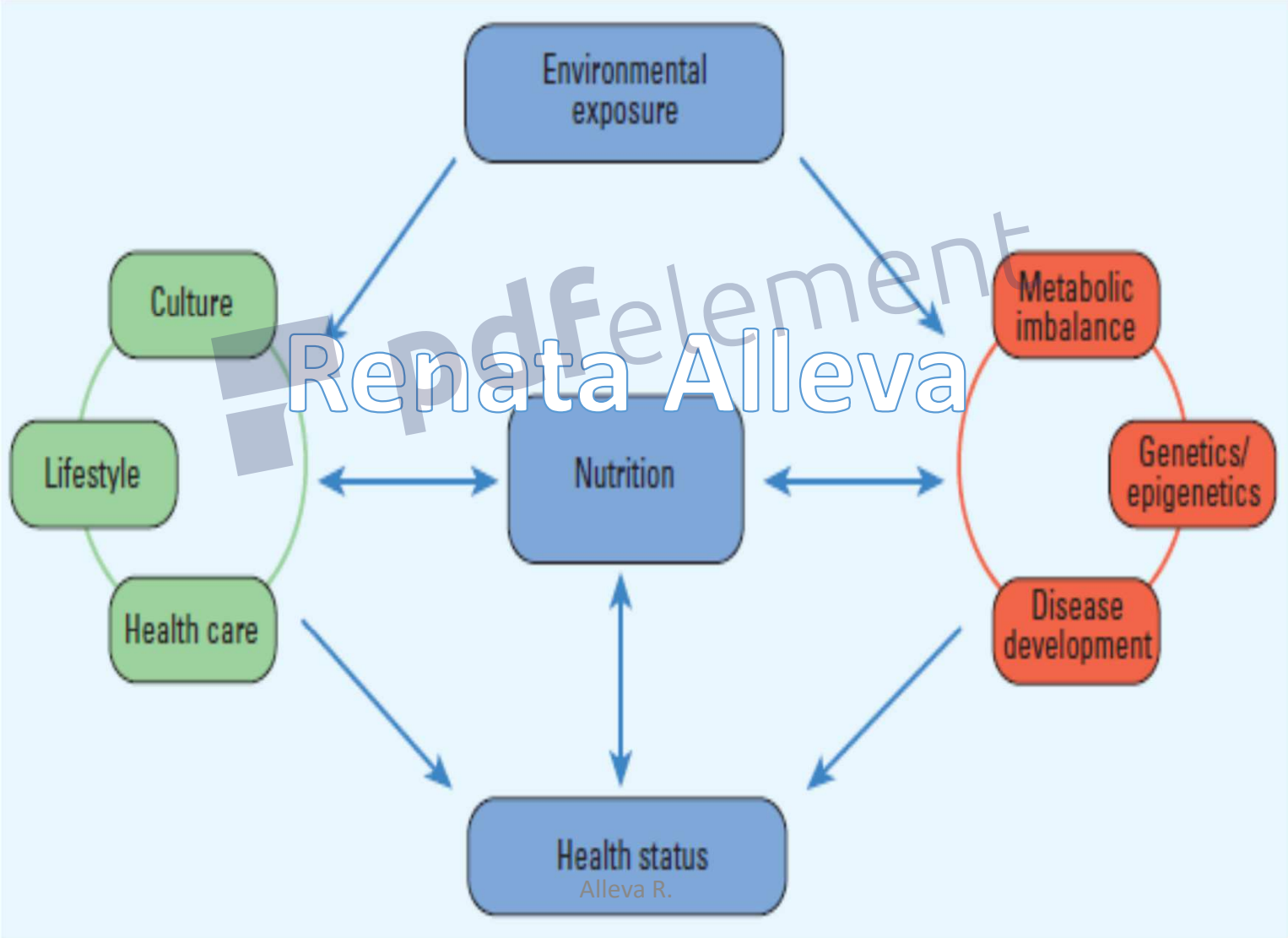
Cuminaldeide

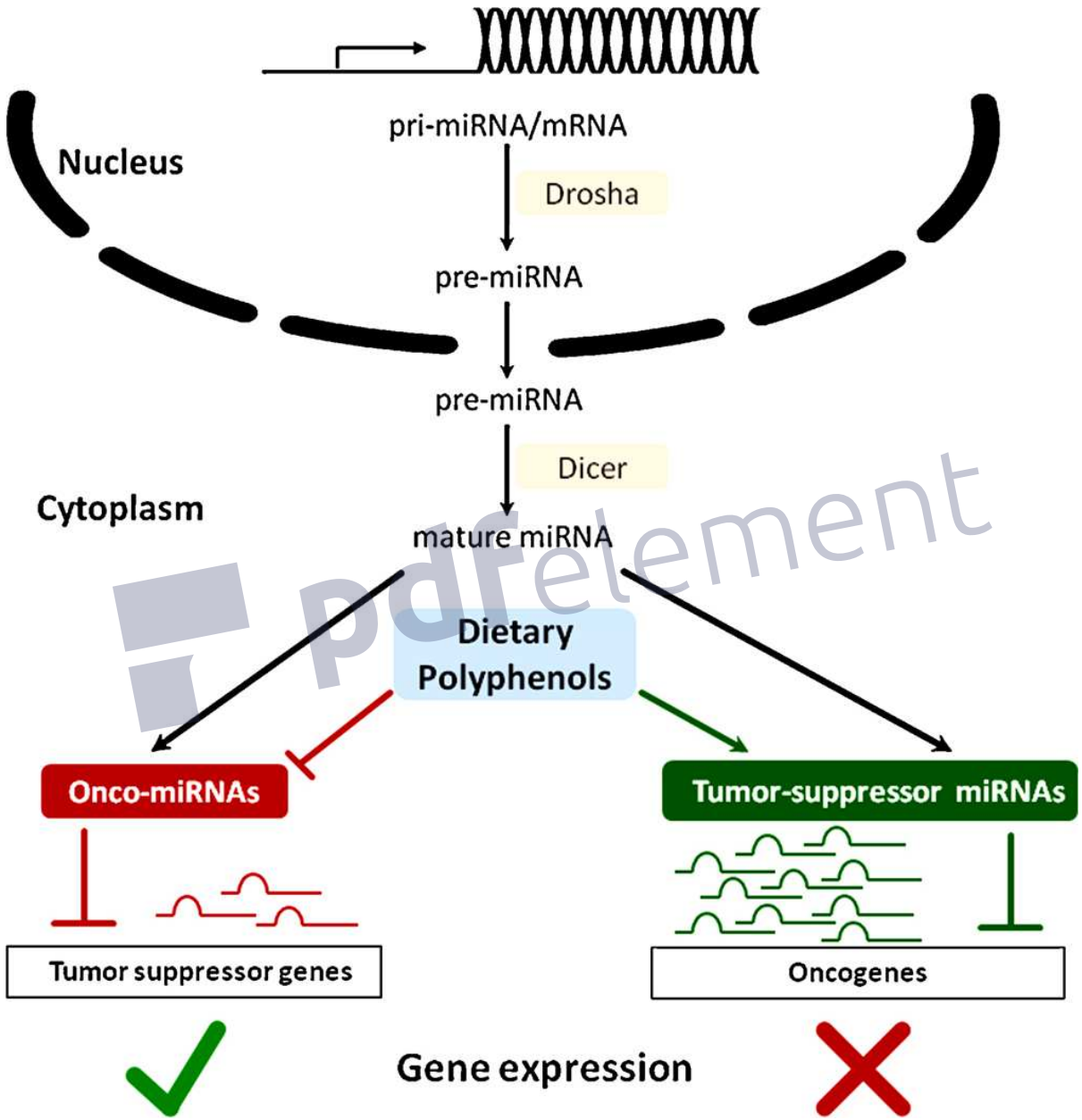


Acido rosmarinico



Cinnamaldeide



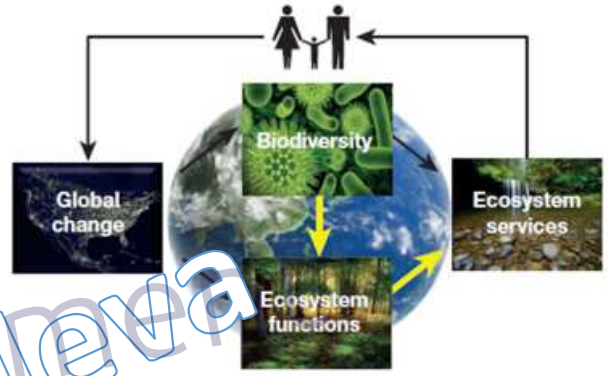


REVIEW

doi:10.1038/nature11148

Biodiversity loss and its impact on humanity

Bradley J. Cardinale[1], J. Emmett Duffy[2], Andrew Gonzalez[3], David U. Hooper[4], Charles Perrings[5], Patrick Venail[1], Anita Narwani[1], Georgina M. Mace[6], David Tilman[7], David A. Wardle[8], Ann P. Kinzig[5], Gretchen C. Daily[9], Michel Loreau[10], James B. Grace[11], Anne Larigauderie[12], Diane S. Srivastava[13] & Shahid Naeem[14]

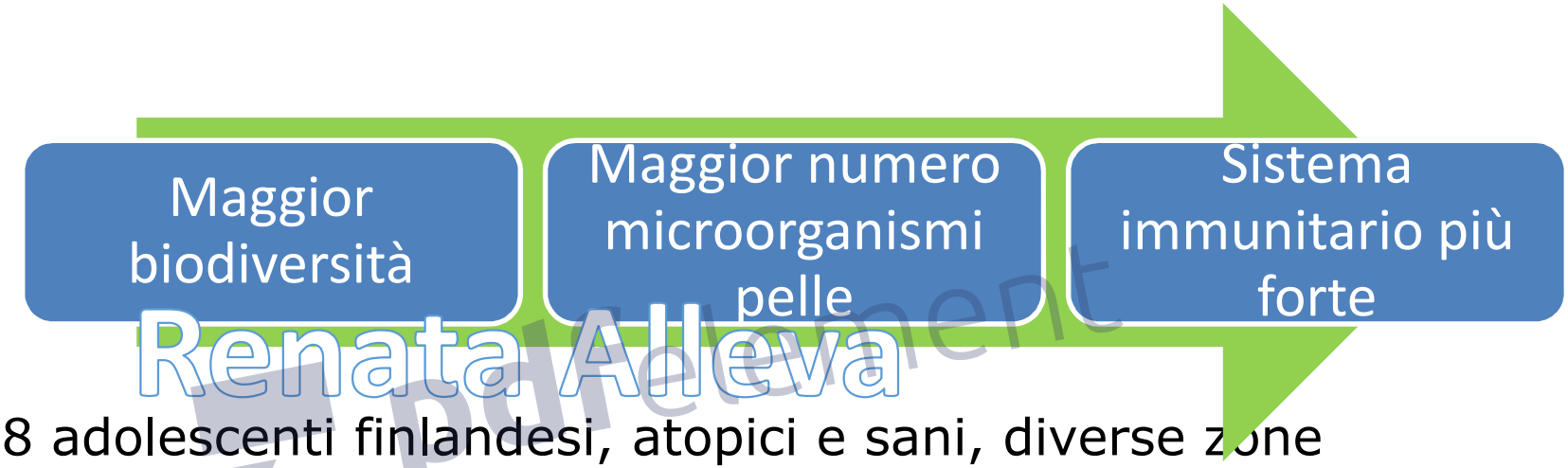


“The biodiversity hypotesis”

L'ipotesi sulla biodiversità e le malattie allergiche: posizione dell'organizzazione mondiale sulle allergie

(Haahtela et al., 2013)

Biodiversità ambientale, microbiota umano ed allergie sono correlate



118 adolescenti finlandesi, atopici e sani, diverse zone (città, campagna)

Parametri analizzati: biodiversità zona, sistema immunitario (IL-10), flora batterica cutanea

(Hansky et al., 2013)

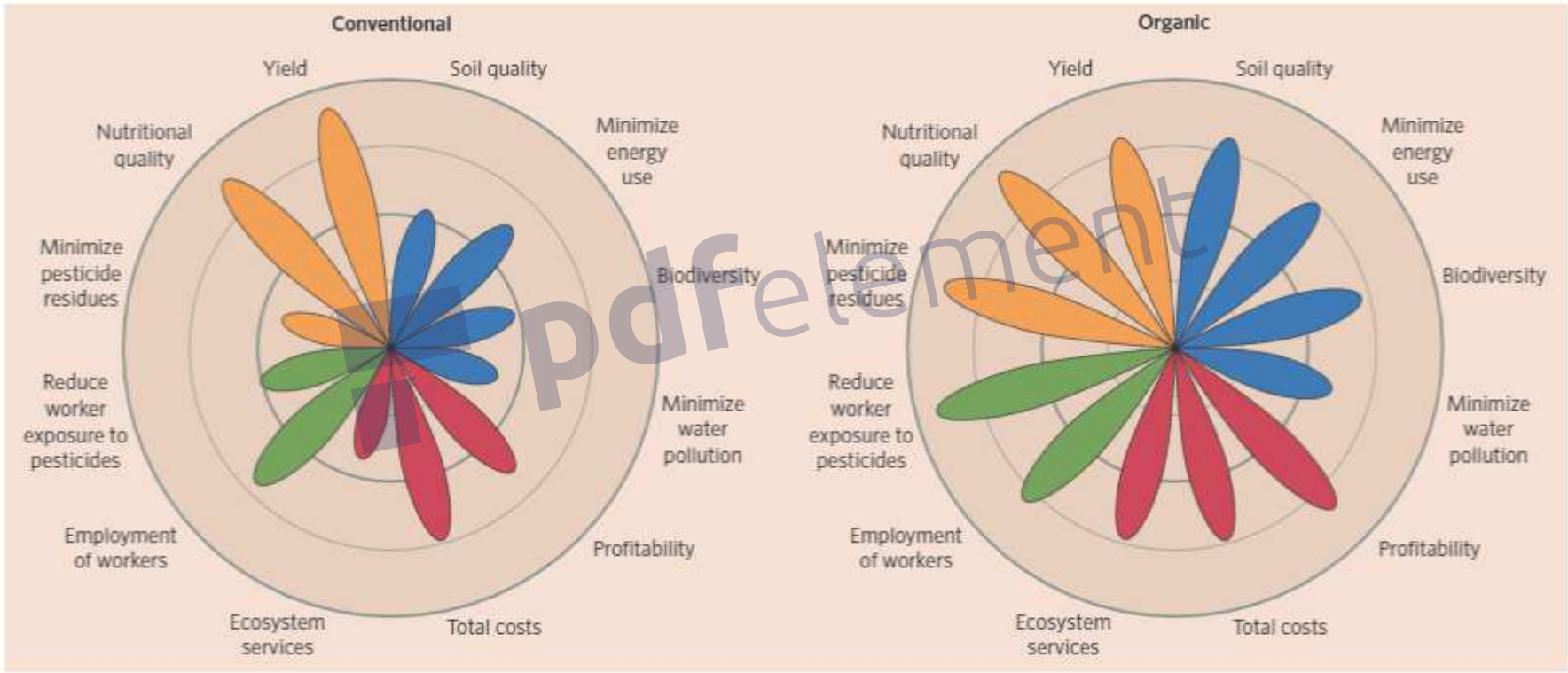


Figure 4 | Assessment of organic farming relative to conventional farming in the four major areas of sustainability. Lengths of the 12 flower petals are qualitatively based on the studies discussed in this Review[15–23,25–29,32–56,58,62–74] and indicate the level of performance of specific sustainability metrics relative to the four circles representing 25, 50, 75 and 100%. Orange petals represent areas of production; blue petals represent areas of environmental sustainability; red petals represent areas of economic sustainability; green petals represent areas of wellbeing. The lengths of the petals illustrate that organic farming systems better balance the four areas of sustainability.

IN ITALIA

L'impronta idrica degli sprechi alimentari equivale a circa 2.500 miliardi di litri ogni anno nel mondo.

Fonte: elaborazioni BCFN su dati Fao e WWF

iPES FOOD
INTERNATIONAL PANEL OF EXPERTS ON SUSTAINABLE FOOD SYSTEMS

Resa ,media dell'agricoltura biologica è equivalente a quella industriale e il 30% maggiore negli anni di siccità grazie alla resistenza e adattabilità Inoltre nelle aziende biologiche si ha una maggiore biodiversità dal 30 al 50% in più (Report 2016)

HOW TO LEAVE INDUSTRIAL AGRICULTURE BEHIND: FOOD SYSTEMS EXPERTS URGE GLOBAL SHIFT TOWARDS AGROECOLOGY

PRINT

E ora le reazioni…..trova quella giusta

Sapevo del problema ambientale e ho cercato di capire cosa posso fare io

I contaminanti ambientali hanno un impatto importante sulla salute e donne in gravidanza, feti, e bambini sono i più sensibili

E' necessario ridurre l'esposizione ai contaminati attraverso la catena alimentare

Una strategia di prevenzione deve sostenere produzioni a basso impatto ambientale e assicurare alimenti che siano privi di residui

Attualmente i prodotti biologici risultano dal punto di vista dei contaminati più sicuri per la salute non solo per i residui negli alimenti ma per l'impatto sull'ambiente

Nutrirsi per nutrire

Dieta materna

Epigenetica

Sviluppo del feto

Salute del bambino e nel futuro di adulto

Signora mi raccomando, durante la gravidanza stia lontana dai gatti!

Alleva R.