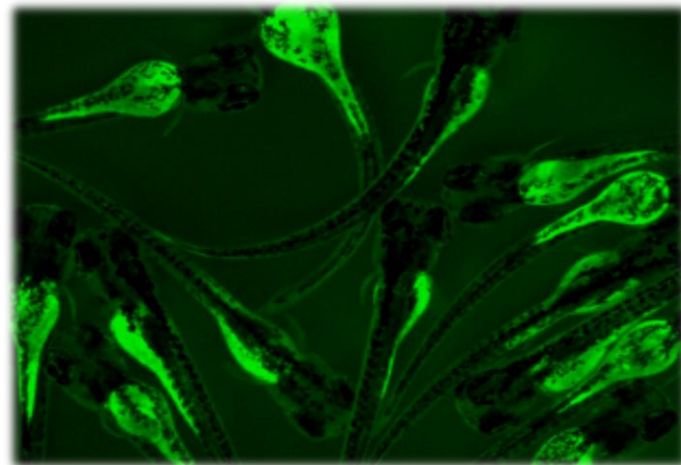


化妆品测试 新方法

杜伟樑 (Jimmy)先生/ 董事总经理
水中银（国际）生物科技有限公司



水中银简介

- 水中银（國際）生物科技有限公司
- 亚洲第一家及唯一认可的 ISO测试实验室在鱼类 (FET) 体内(*in vivo*) 毒性筛选方法 (符合欧盟指令动物试验的替代)
- 2010年4月成立（香港）
- 为许多国际测试实验室和化妆品巨头 的委托研究(CRO) 服务



实验室&办公室：香港科学园



Quality is Assured



ISO Accredited Laboratory

公司理念

打造一个创新的**生物测试**解决方案平台

- 补充现有化学测试方法不足的环节
- 提升日程消费品的安全
- 保护环境

合作伙伴



環境保護署

Environmental Protection Department



BUREAU
VERITAS



水務署

Water Supplies Department



香港公開大學

THE OPEN UNIVERSITY
OF HONG KONG

SGS



MateriaLab



深圳水务集团
SHENZHEN WATER GROUP



深圳出入境检验检疫局

SHENZHEN ENTRY-EXIT INSPECTION AND QUARANTINE BUREAU



上海出入境检验检疫局

Shanghai Entry-Exit Inspection and Quarantine Bureau

华大基因
BGI



香港城市大學
City University
of Hong Kong



Vitargent



Hong Kong 香港科技园
Science & Technology Parks



CMA Testing
and Certification
Laboratories
廠商會檢定中心



2个世界化妆品趋势





1. 内分泌干扰素

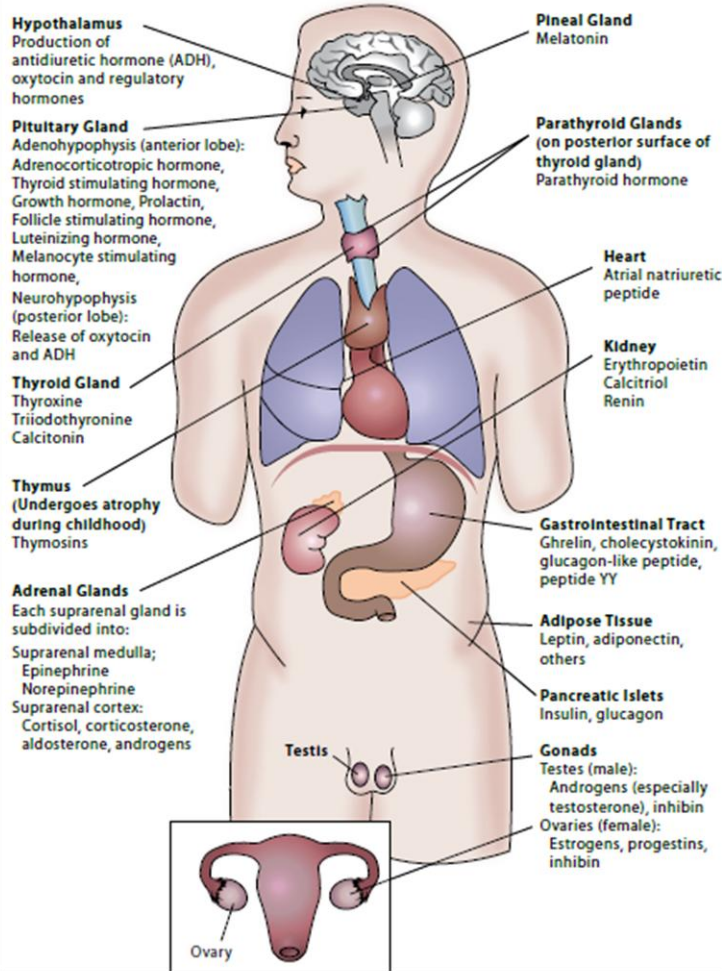
(雌激素干扰素)

1. 我们的着重点

研究最广泛：

- 雌激素干扰素

- 雄激素干扰素
- 甲状腺干扰素

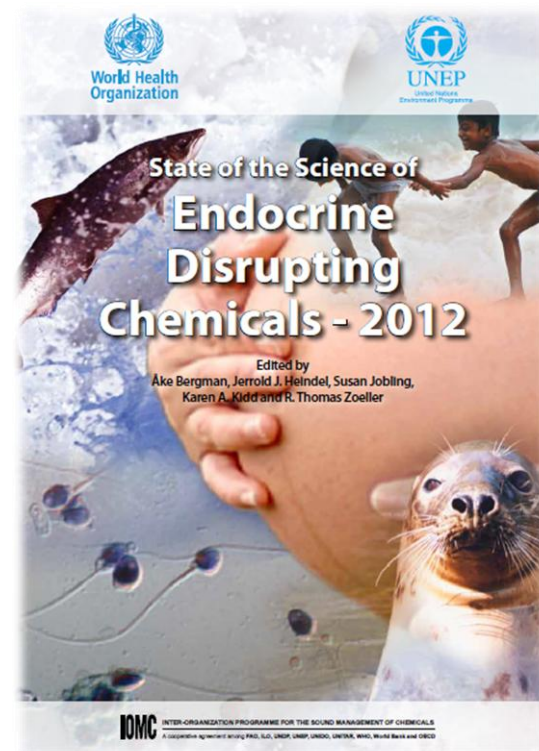
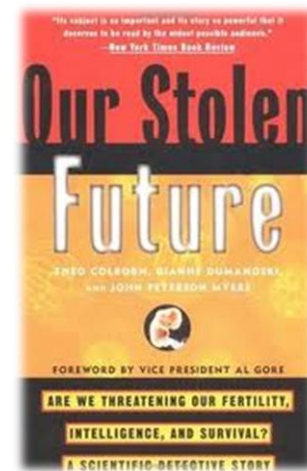


Copy from State of the Science of Endocrine Disrupting Chemicals-2012.

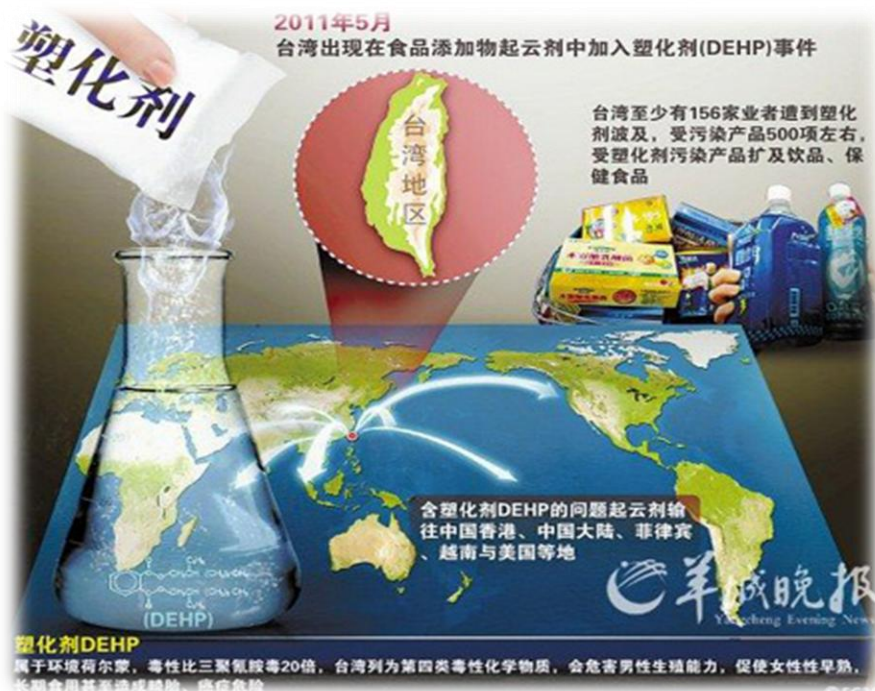
1. 老故事

乙烯雌酚 (diethylstilbestrol/ DES)

一种人工合成的雌激素。医生曾开给多达五百万孕妇以防止自然流产和促进胎儿生长，其后发现该雌激素会影响小孩生殖系统发育及诱发阴道癌及乳腺癌等副作用，于二十世纪七十年代初开始禁用。据科学研究报道，该雌激素影响了母亲，子女（不育，癌症及性取向等）及孙儿。该教训也促使美国FDA加强了对药物及化学品的评估和管理，其1996年启动的内分泌干扰素筛选项目就是高度显著的一步。



1. 老故事



双酚A



尼泊金酯

增塑剂

人造香味



1. 内分泌干扰素问题

市面上超过 **87,000** 种化学品

--美国环保局

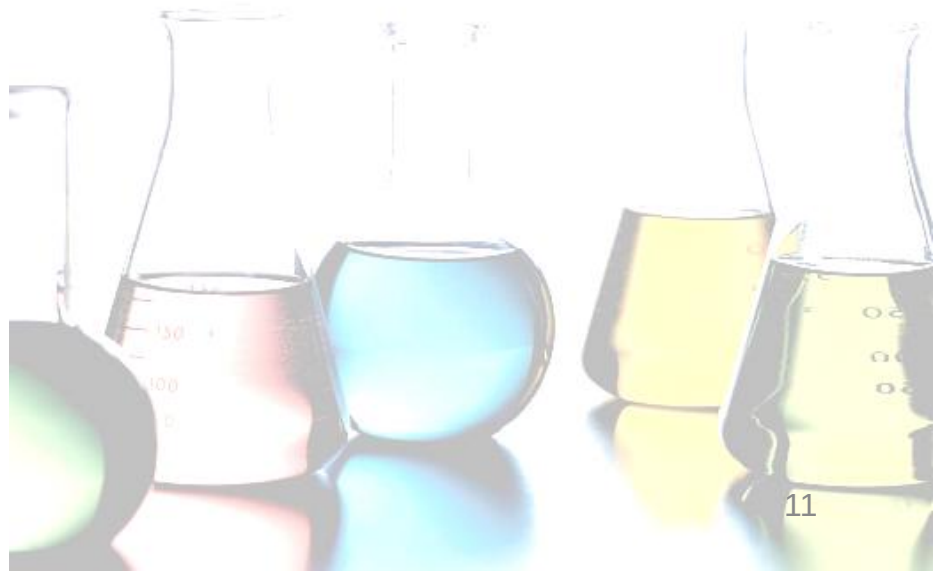
已知的内分泌干扰素只是 “冰山一角”

-- UN环境保护署&WHO

1. 内分泌干扰素问题

“内分泌干扰素污染已经成为人类造成的对人类、生物多样性和生态系统最严重的危害之一”

-USEPA, UN, WHO



1. 关于内分泌干扰素的政府行动

- 美国环保局 - 内分泌干扰素筛查项目（1996）
- REACH - 把内分泌干扰活性作为界定高度关注物质的重要依据
- 不论生产规模的大小，所有物质都要提供内分泌干扰活性数据
- EU No. 1223/2009-产品安全报告（2013年7月起全面生效）-生育毒性

1. 海外社会和政府行动

丹麦消费者委员会 于2009年开始了在化妆品、护肤品中禁用内分泌干扰素运动

瑞士和挪威 于2011年也开始了该运动

Campaign against endocrine disruptors in cosmetics

18 Feb 2010

In November and December 2009 the **Danish Consumer Council** carried out a campaign with the aim of bringing endocrine disruptors in cosmetics into focus.



1. 海外社会和政府行动

Newsletter from the Danish Consumer Council on
endocrine disrupting chemicals (EDCs)

58 brands of cosmetics now without EDCs

While the EU Commission is currently debating whether or not to ban parabens in personal care products for children, 58 brands no longer use the parabens or any other EDCs in their cosmetic and personal care products for children or adults in Denmark. The Danish Consumer Council is pleased with this development, but wants more international brands to phase out the EDCs.



Chemical name	Found here	Function
3-Benzylidene Camphor	Sun tan lotion, anti wrinkle	UV-filter
4,4'-Dihydroxy-Benzophenone	Sun tan lotion, anti wrinkle	UV-filter
4,4'-Dihydroxy-Biphenyl (Dihydroxybiphenyl)	Cosmetics in general	bleaching, skin protection
4-Methylbenzylidene Camphor	Sun tan lotion, anti wrinkle	UV-filter
Benzophenone-1	Sun tan lotion, anti wrinkle	UV-filter
Benzophenone-2	Sun tan lotion, anti wrinkle	UV-filter
BHA or tert. Butylhydroxanisol	Cosmetics in general	Antioxidant
Boric Acid	Cosmetics in general	Antimicrobial
Butylparaben	Cosmetics in general	Preservative
Cyclotetrasiloxane	Cosmetics in general	Care for hair and skin
Diethyl phthalate (DEP)	Cosmetics in general	Denaturant
Ethylhexyl methoxycinnamate or Octyl methoxycinnamate	Sun tan lotion, anti wrinkle	UV-filter
Ethylparaben	Cosmetics in general	Preservative
Hydroxycinnamic Acid	Cosmetics in general	Skin care
Methylparaben	Cosmetics in general	Preservative
Propylparaben	Cosmetics in general	Preservative
Resorcinol	Hair dyes	Hair colour

30th of March 2012/ Dok: 125407/CJ

Ban EDCs in consumer goods:

<http://taenk.dk/nyheder/ban-endocrine-disrupting-chemicals-in-consumer-products>

Cosmetics and personal care products – The Danish Consumer Council has made a (green) list of brand names that do not use EDCs in their cosmetics and personal care products, as well as a (red) list of brand names which have proclaimed that they would not remove the EDCs.

FORBRUGER RÅDET

Do not use the 17 EDCs	Will not phase out the 17 EDCs
Actavis Alison Aloe Vera Group Alva Apotekets Solserie Apotekets Hudpleje Apotekets Babypleje Australien Bodycare Badeanstalten Balance Me BIOselect Botanical Extracts Careful Cerudan Cattier Paris Cliniderm COOP (kun egne produkter) Cowshed Dansk Kosmetik Salg Derma Dr. Hauschka Estelle og Thild Flourescent Parfume Green & Passion Honoré des Prés Parfume HH Simonsen IKEA Immas JUBIO Jume Jurlique Logona Lukus Aloe Vera (Alison) Médara Marinella Cosmetics Matas (de stribede) Mellisa Naturkosmetik Naturvive Neutral Nilsens Jord	Olive (Alison) Organic Apoteke Plaiar REMA 1000 (Organic Circle) REN Rudolph Care Sanex Santé Suki skin care The Organic Pharmacy Tusindfynd (Irma) Tannasen Utekrum UVBIO Weleda Youngblood Zanz Organic Products Zinobel If you want to be sure to avoid EDCs in cosmetics and personal care products, choose Swan labelled products.  www.ecolabel.dk Get the list of the 17 EDCs: Text: hormonkemi to 1231 The service is free
	Astellas Pharma Biotherm (Via L'Oréal) Faaborg Garnier (Via L'Oréal) GlossSmithsline Helena Rubinstein (L'Oréal) H&M Huggies Kérastase (Via L'Oréal) Kieh's (Via L'Oréal) Lancome (Via L'Oréal) La Roche-Posay (Via L'Oréal) L'Oréal Lush Matrix (Via L'Oréal) Maybelline (Via L'Oréal) Molton Brown Ole Henriksen Oriflame Piz Buin Reckitt Benckiser Redken (Via L'Oréal) Revlon Schwarzkopf Simple The Body Shop Vest Vichy (Via L'Oréal) WE-HA Yves Saint Laurent (Via L'Oréal)

1. 社会团体行动



EDC Free – Stop hormone disrupting chemicals

Act now to remove hormone disrupting chemicals from our daily lives



CAMPAIGN NEWS

[Subscribe to campaign news here](#)

SUPPORT THE CAMPAIGN

Become a campaign supporter by filling in the form [here](#).

CONTACT THE CAMPAIGN

E-mail address: info@env-health.org

Phone: 0032 (2) 234 36 40

Home

2013 is a crucial year for EU action on hormone disrupting chemicals (also known as Endocrine Disrupting Chemicals or EDCs). We have a unique opportunity to prevent suffering and reduce rising costs of health care associated with EDCs. [Join our campaign](#) as a supporting organisation and receive our campaign news.

EDC Free – Stop hormone disrupting chemicals

Campaign 'Call for Action'

该运动结束了吗？

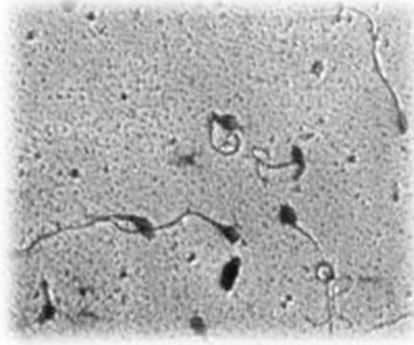
不，这只是开始…

1. 雌激素内分泌干扰素

- 雌激素干扰素的副作用



癌症



生育能力降低



性早熟



肥胖



神经紊乱



发育畸形

1. 巨大市场需求 - 高危群体 (*Estrogen-Sensitive*)



婴幼儿



男士



怀孕女士



癌症病人及康复者

1. 巨大潜在市场需求

Face Creams Without Hormones

By MayankJ, eHow Contributor



0



Related Searches: [Beauty Creams](#) [Facial Moisturizer](#)



Hormones or chemicals that mimic hormones are common in face creams. Any face cream that contains mineral oil or petroleum has chemicals that mimic hormones, and these chemicals are absorbed



The Campaign for Safe Cosmetics



SHAMPOO
AVERAGE NUMBER OF CHEMICALS: 15
MOST WORRYING: Sodium Lauryl Sulphate; Tetrasodium and Propylene Glycol.
POSSIBLE SIDE-EFFECTS: Irritation; possible eye damage.

HAIRSPRAY
AVERAGE NUMBER OF CHEMICALS: 11
MOST WORRYING: Octinoxate, Isophthalates.
POSSIBLE SIDE-EFFECTS: Allergies; irritation to eyes, nose and throat; hormone disruption, linked to changes in cell structure.

EYE SHADOW
CHEMICALS: 26
MOST WORRYING: Polyethylene terephthalate.
POSSIBLE SIDE-EFFECTS: Linked to cancer; infertility; hormonal disruptions and damage to the body's organs.

BLUSHER
CHEMICALS: 16
MOST WORRYING: Ethylparabens, Methylparaben, Propylparaben.
POSSIBLE SIDE-EFFECTS: Rashes; irritation; hormonal disruptions.

FOUNDATION
CHEMICALS: 24
MOST WORRYING: Polymethyl methacrylate.
POSSIBLE SIDE-EFFECTS: Allergies; disrupts immune system; links to cancer.

LIPSTICK
CHEMICALS: 33
MOST WORRYING: Polymethyl methacrylate.
POSSIBLE SIDE-EFFECTS: Allergies; links to cancer.

DEODORANT
CHEMICALS: 15
MOST WORRYING: Isopropyl Myristate, 'Parfum'.
POSSIBLE SIDE-EFFECTS: Irritation of skin, eyes and lungs; headaches; dizziness; respiratory problems.

NAIL VARNISH
CHEMICALS: 31
MOST WORRYING: Phthalates.
POSSIBLE SIDE-EFFECTS: Linked to fertility issues and problems in developing babies.

PERFUME
CHEMICALS: 250
MOST WORRYING: Benzaldehyde.
POSSIBLE SIDE-EFFECTS: Irritation to mouth, throat and eyes; nausea; linked to kidney damage.

FAKE TAN
CHEMICALS: 22
MOST WORRYING: Ethylparaben, Methylparaben, Propylparaben.
POSSIBLE SIDE-EFFECTS: Rashes; irritation; hormonal disruption.

26 Seconds.
is all it takes for the chemicals in your personal care products to enter your bloodstream.
What's in your products?

- 1/2消费者**非常关心**在消费产品中使用的化学品对健康的影响
- 65% ：更纯净和安全的配方; 选择产品拥有社会责任及生态可持续发展的愿望，以及独立**认证**
- 尤其**婴儿产品**

2. 动物测试



2. 动物保护



Be Cruelty-Free

The global campaign to end animal testing for cosmetics



Be Cruelty-Free Friends



人体实验每天上演

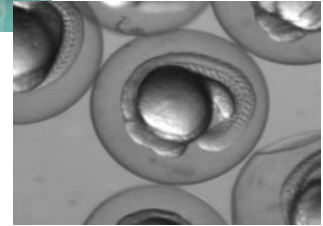


2. 动物测试法规

- 3R原则: 替代，减少和改进动物测试
- 欧盟动物保护法规（Directive 2010/63/EU）2013年1月开始生效
- 欧盟化学品法规: REACH (2006)
- 欧盟化妆品指示(76/768/EEC, 2003)
- 从2013年3月11日起全面禁止应用动物于化妆品成分和产品测试！

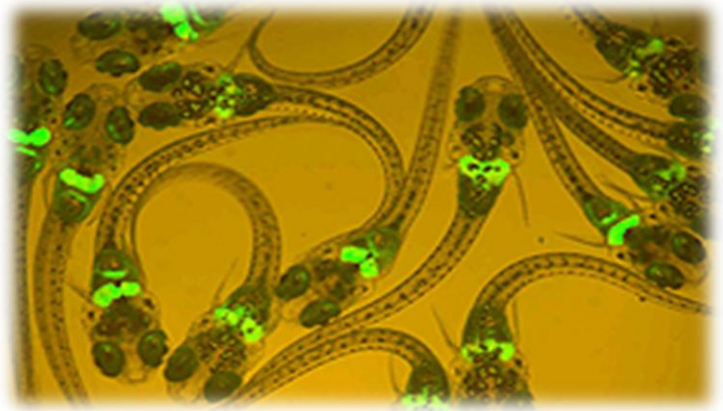
2. 动物测试替代方法

- 细胞培育
- 人工组织



• 鱼胚胎

- 统计分析
- 计算机建模



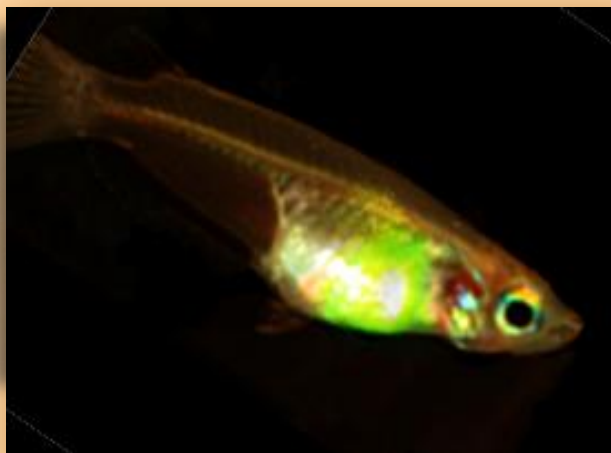
内分泌干扰素测试替代方法

- 雌激素受体结合试验

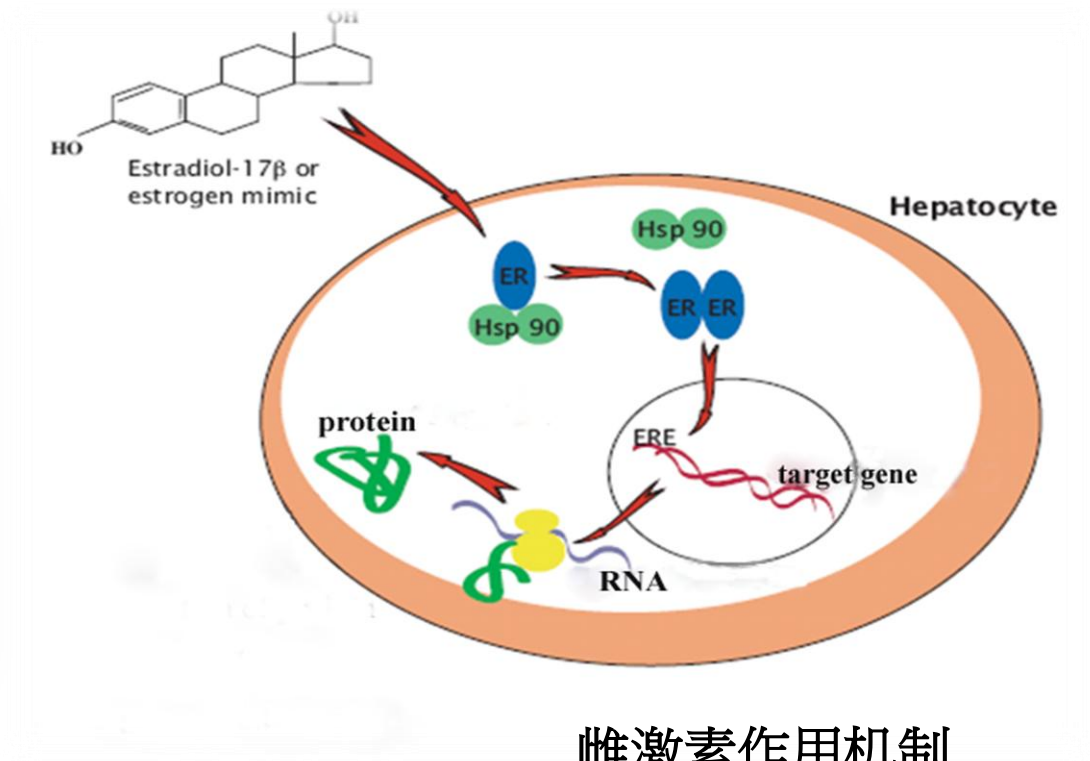
• 鱼胚胎报告基因测试

- 雌激素受体激活表达（人类Hela9903细胞系）
- 固醇生成分析（人类H295R细胞系）
- 雄激素受体结合试验（老鼠前列腺）
- 两栖动物脱变（蛙）

转基因鲟鳊鱼专利技术



咸水鲟鳊鱼



雌激素作用机制

转基因鲭鲙鱼测雌激素



US Patent No .12/730,956



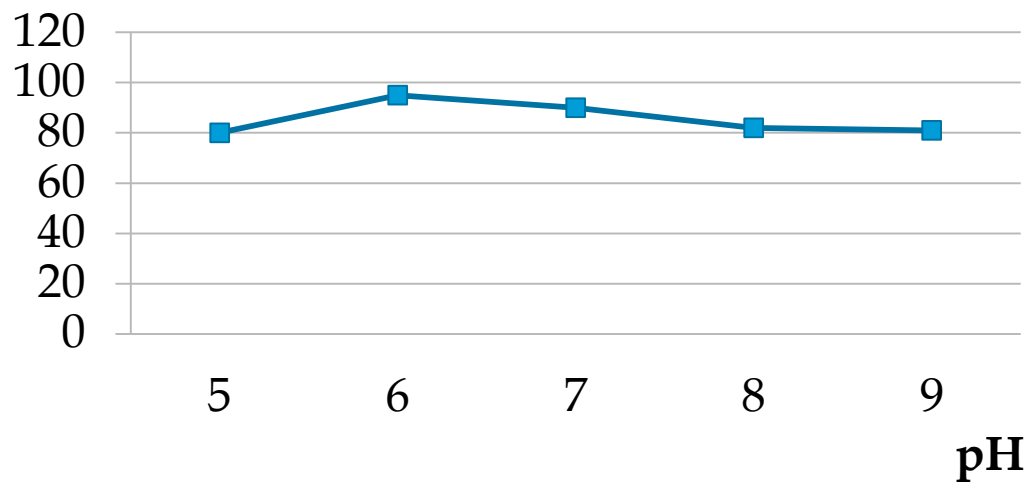
China Patent No . 201010246876.6



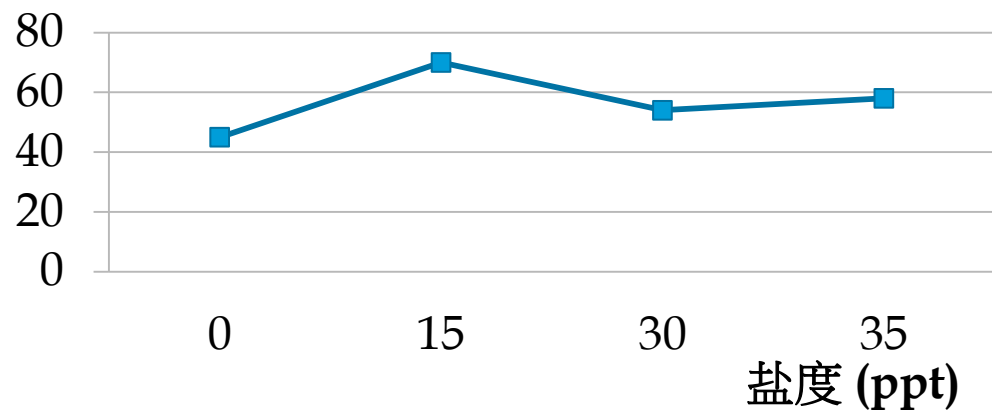
EU Patent No . EP11305315.1

稳定

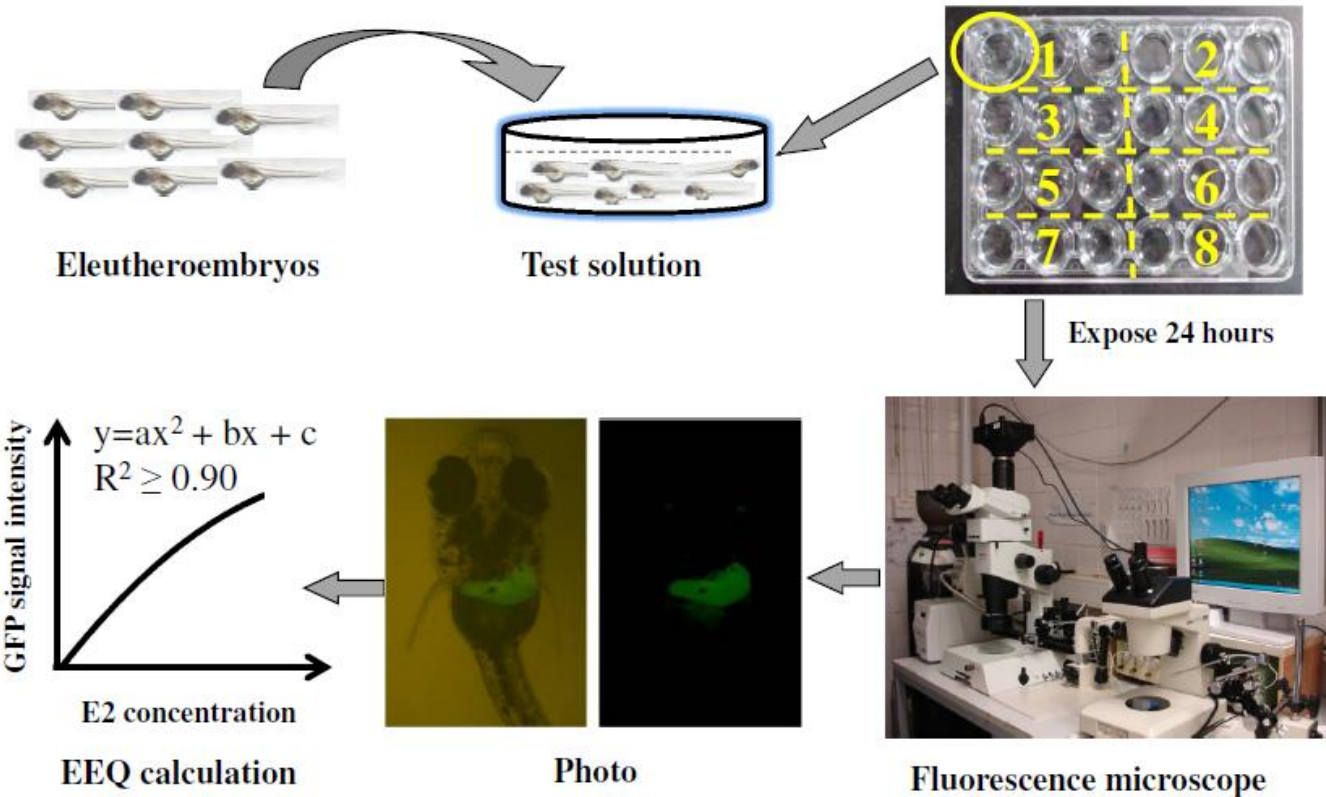
GFP Signal Intensity



GFP Signal Intensity



转基因鲟鳊鱼 - 测试流程简单



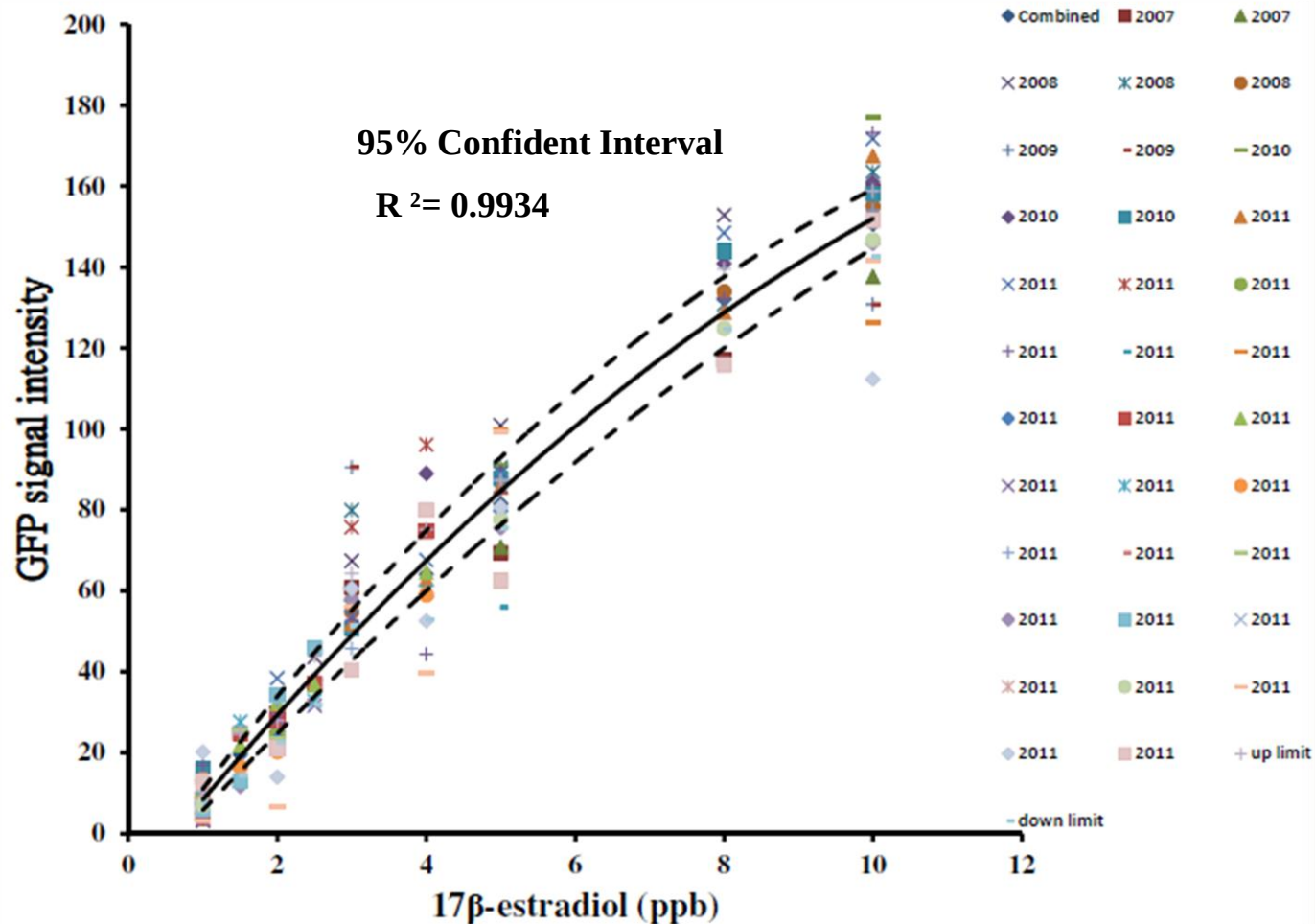
1: Test Sample

➔ Negative Control
2: water
3: vehicle

Positive Control

4: E2 (1 ppb)
5: E2 (3 ppb)
6: E2 (5 ppb)
7: E2 (8 ppb)
8: E2 (10 ppb)

转基因鲟鳊鱼 - 8年数据一致可靠



ISO/TS 20281:2006, Guidance on statistical interpretation of ecotoxicity data

已测试品牌 - 化妆品

HAWAIIAN
Tropic®

GARNIER

GIORGIO ARMANI



ESTÉE LAUDER

SK-II



Melvita
nature at heart

SHISEIDO



LA MER.

Johnson's

shu uemura
tokyo paris new york

BOBBI BROWN



MARY KAY

INTEGRATE

Kiehl's
SINCE 1851



L'ORÉAL
PARIS

LANEIGE

OLAY

CHANEL

FANCL LESS IS MORE

COVERMARK



SpectraBAN

Neutrogena®



Barbie



SÈVE
www.seve.com.hk



BIODERMA
LABORATOIRE DERMATOLOGIQUE

EAU THERMALE
Avène



MUJI 無印良品

lavera
NATURKOSMETIK



GLYCEL
SWITZERLAND

Vitargent

ÍPSA

KOSÉ

NANO
WORLD
納米世界

Watsons 屈臣氏

常见雌激素活性的成分与产品

胎盘提取物

食品染料

丰胸

杀虫剂和农药

止汗剂

防腐剂

植物根部分提取物

抗纹

UV 紫外线过滤

美白

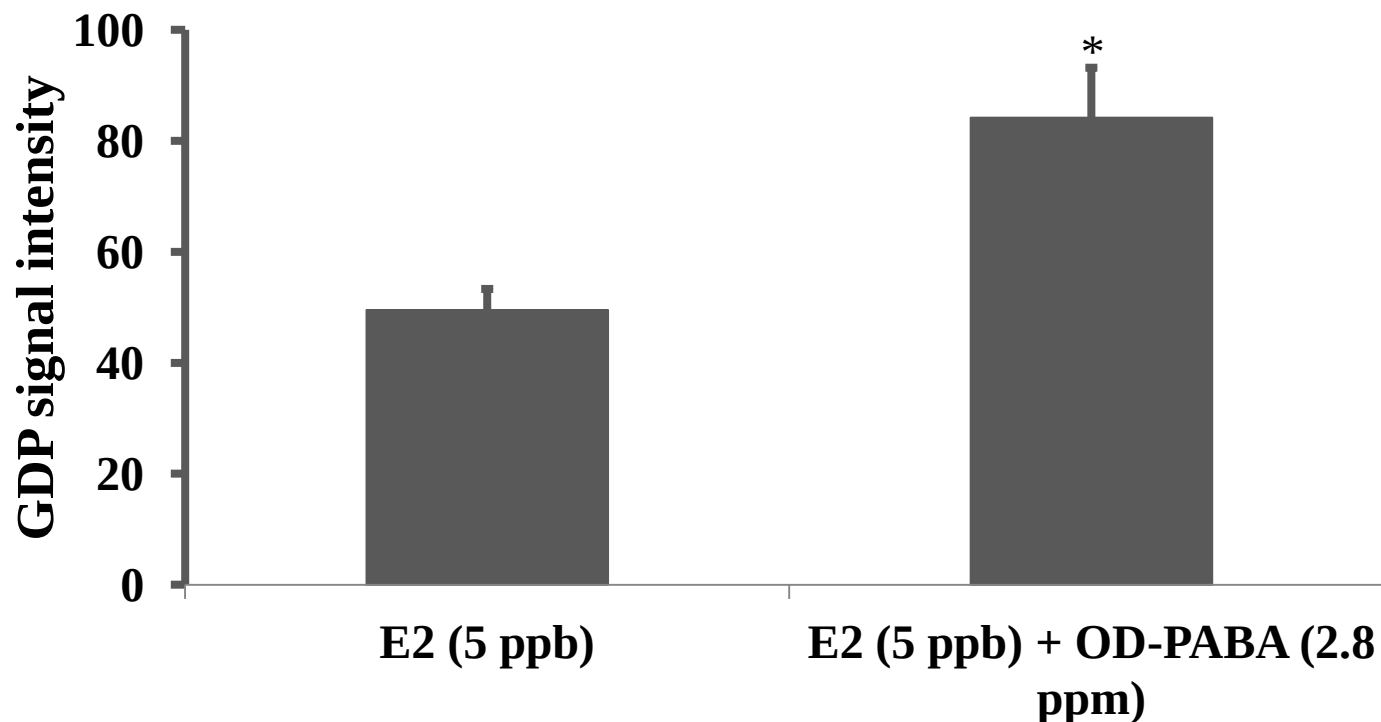
大豆提取物

香料

乳化剂

Estrogen Disruptor Testing

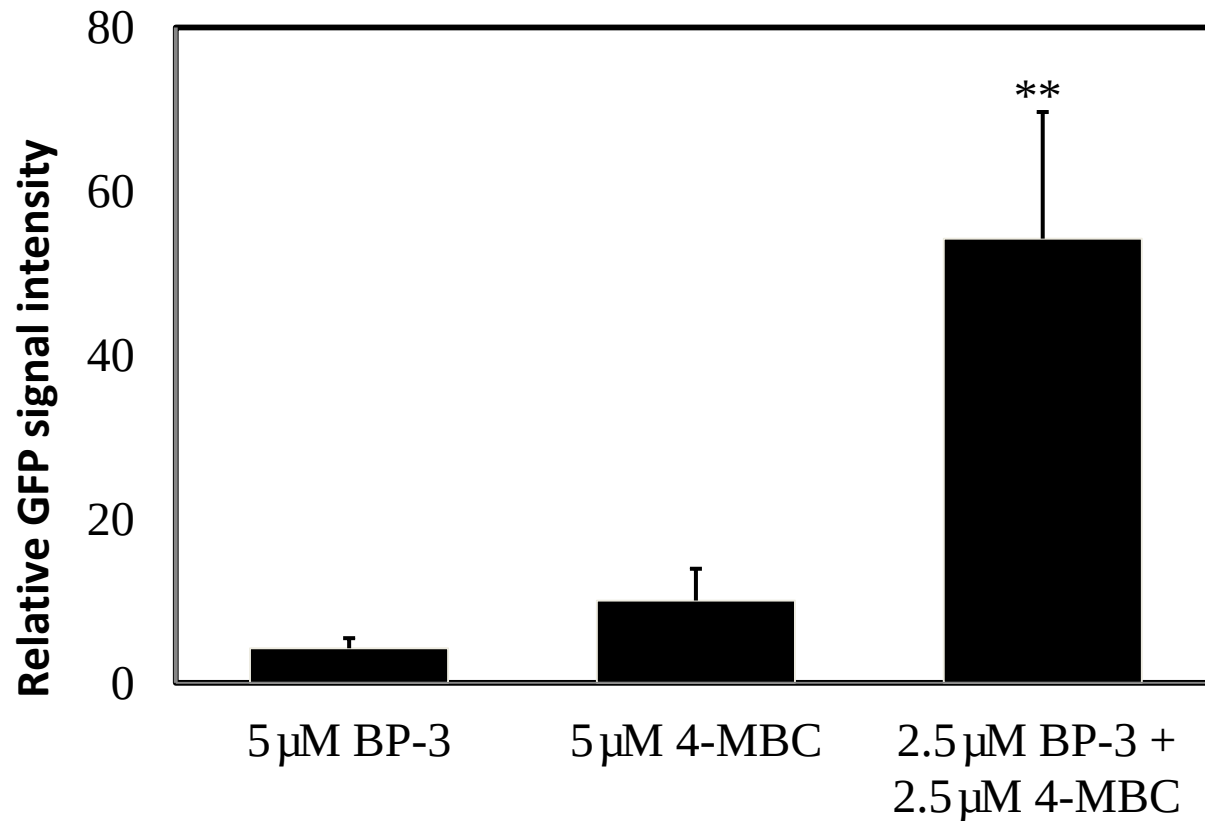
- *Pro-Estrogenic Activity*



OD-PABA is UV filter. * $p < 0.05$

Estrogen Disruptor Testing

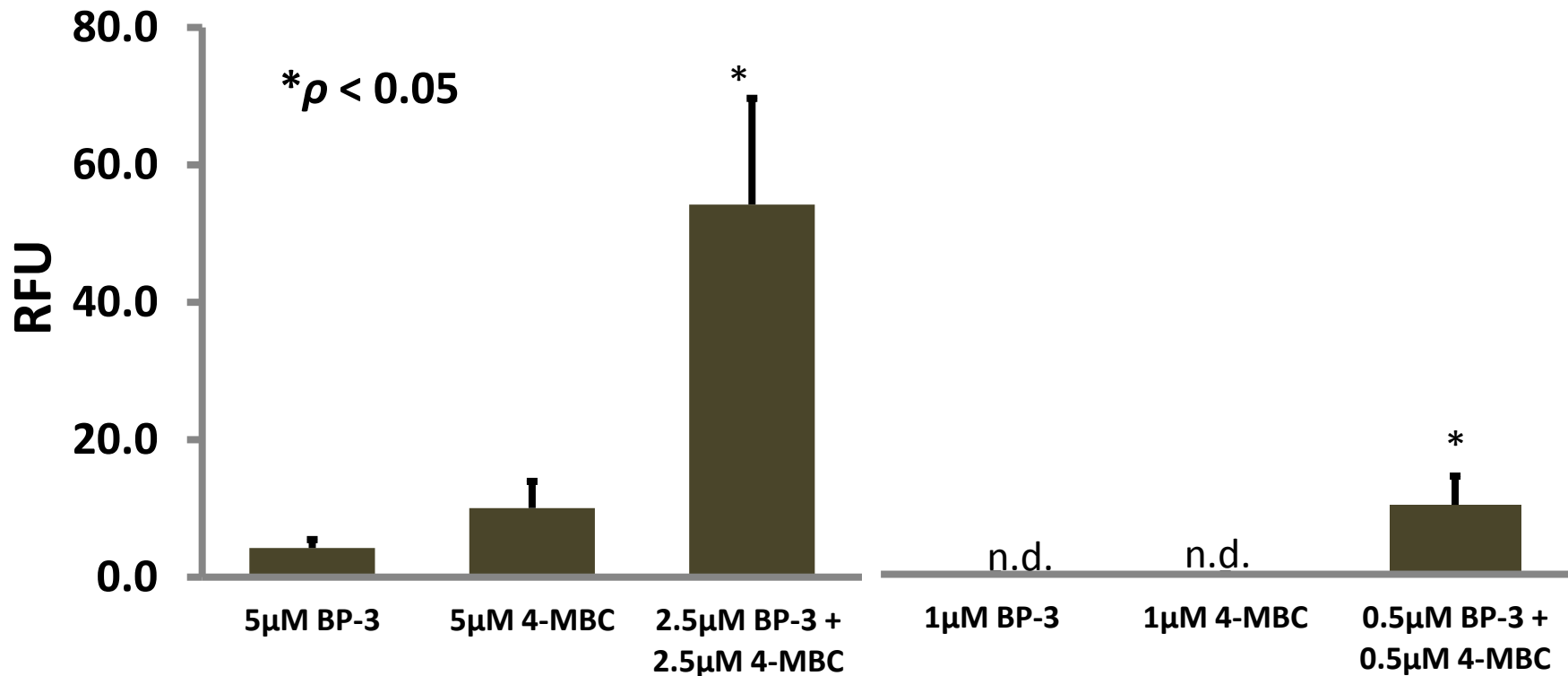
- Mixture Effect



BP-3 and 4-MBC are UV filters. **p<0.005

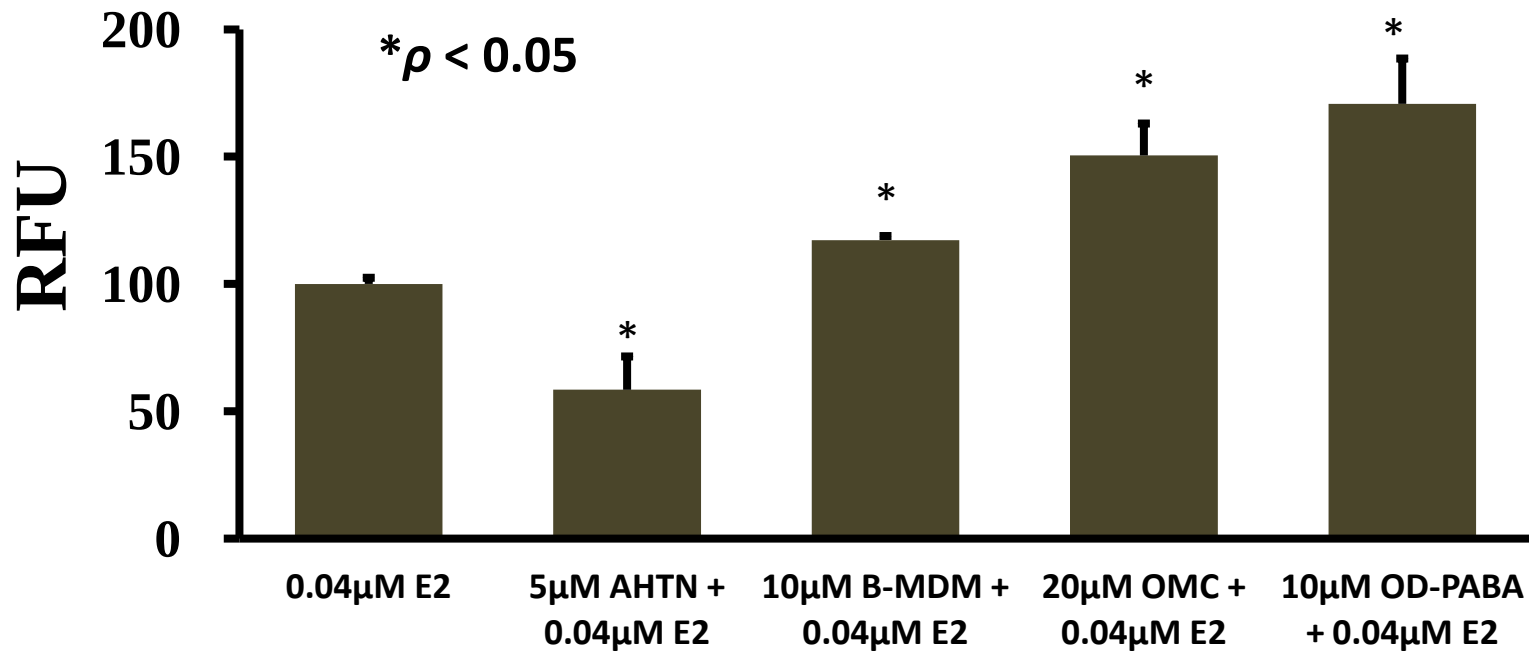
Mixture Effects

–Cosmetics Ingredients (UV filters)



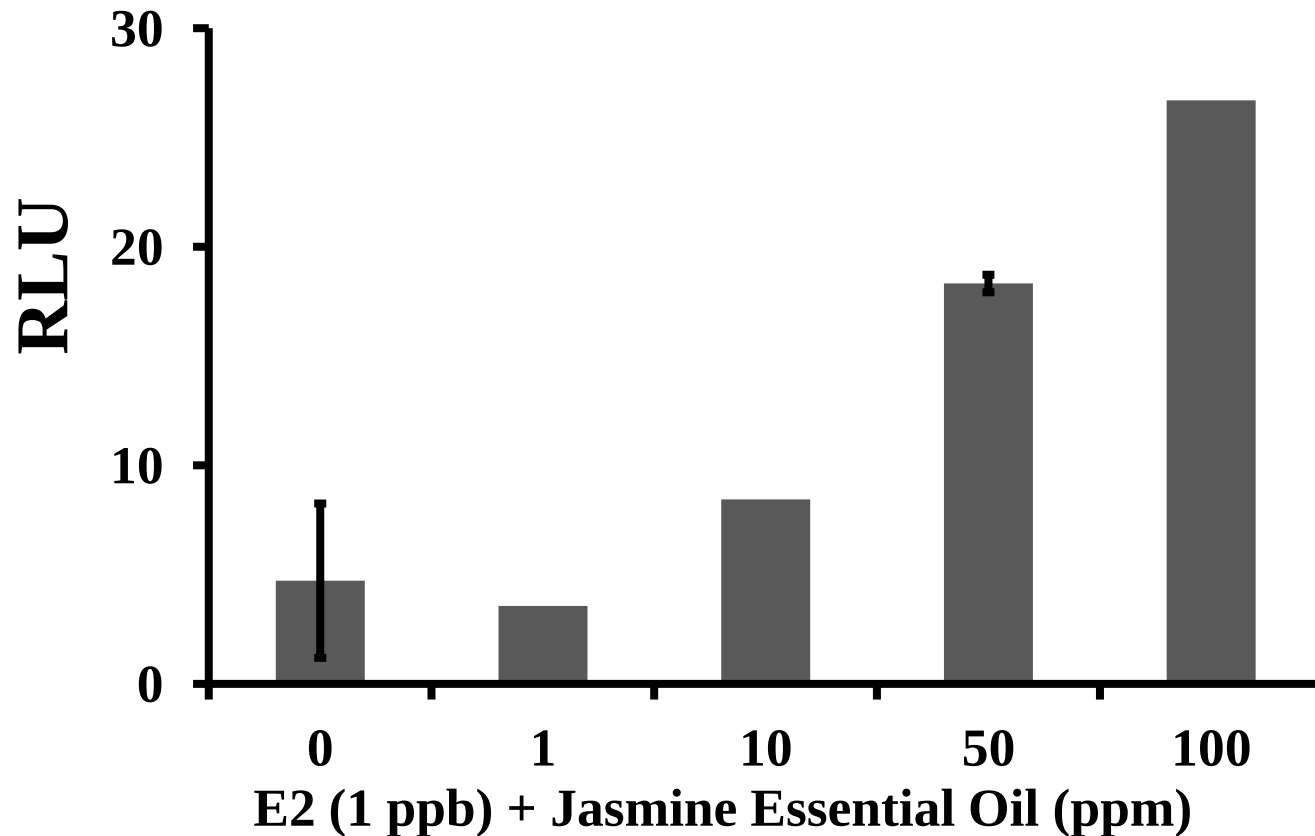
Pro- / Anti-Estrogenic Activity

– *Cosmetics Ingredients (UV filters)*



Pro-Estrogenic Activity

– *Cosmetics Ingredient*



测试结果- 案例研究

Sample No.	Description	EEQ ppb (ng/g)
VI-S2011006D-34	Brand A (essence)	未检出
VI-S2011006D-37	Brand B (精华液)	7160
VI-S2011006D-45	Brand C (essence)	1135
VI-S2011006D-49	Brand D (essence)	未检出
VI-S2011006D-65	Brand E (essence)	未检出

检出下线 = 500 纳克/克

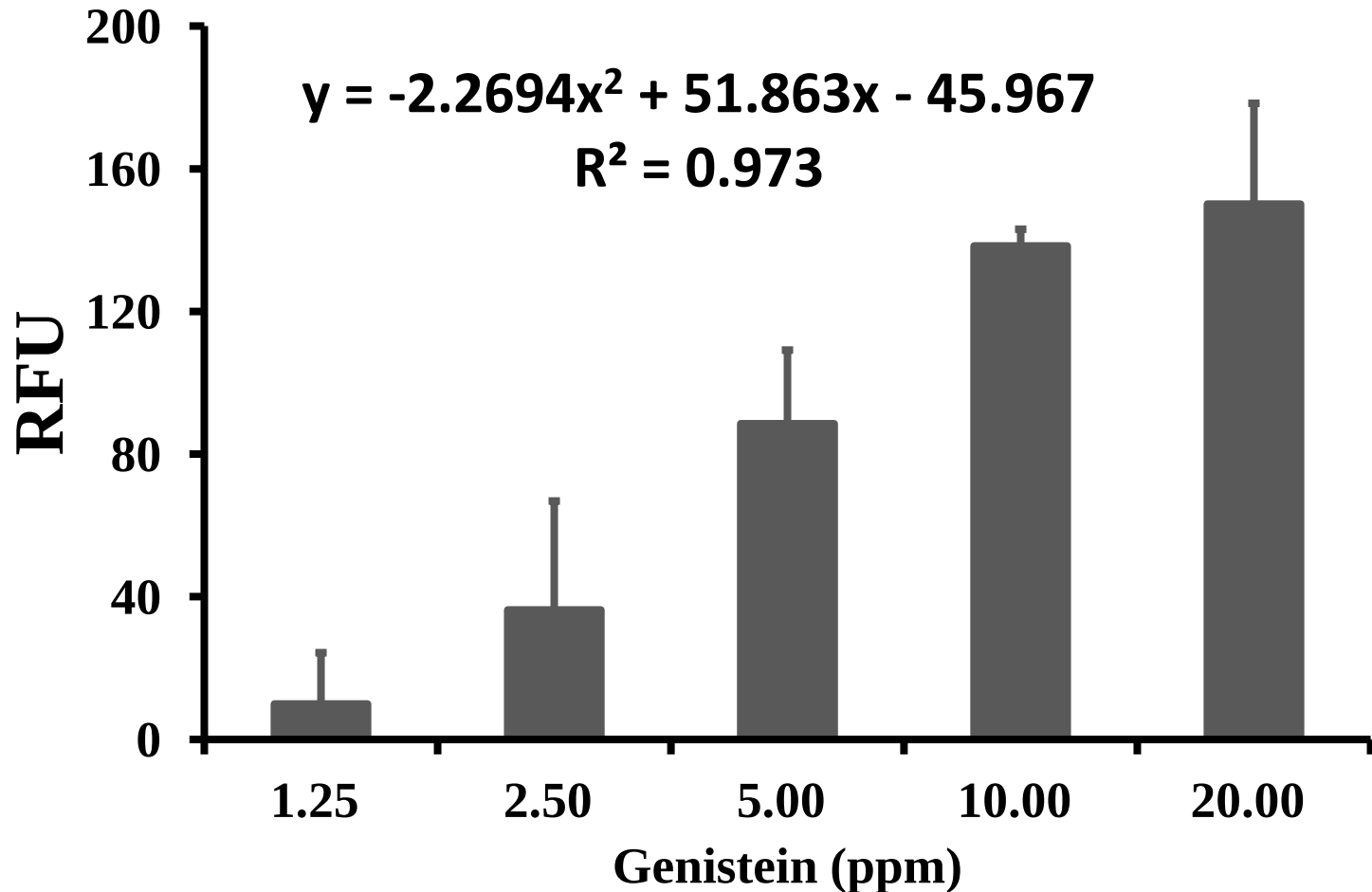
FAO/WHO (2000)建议：每日可摄取的雌激素上限为50纳克每千克体重。如一个60千克体重的人每日可摄入雌激素上限为3微克。



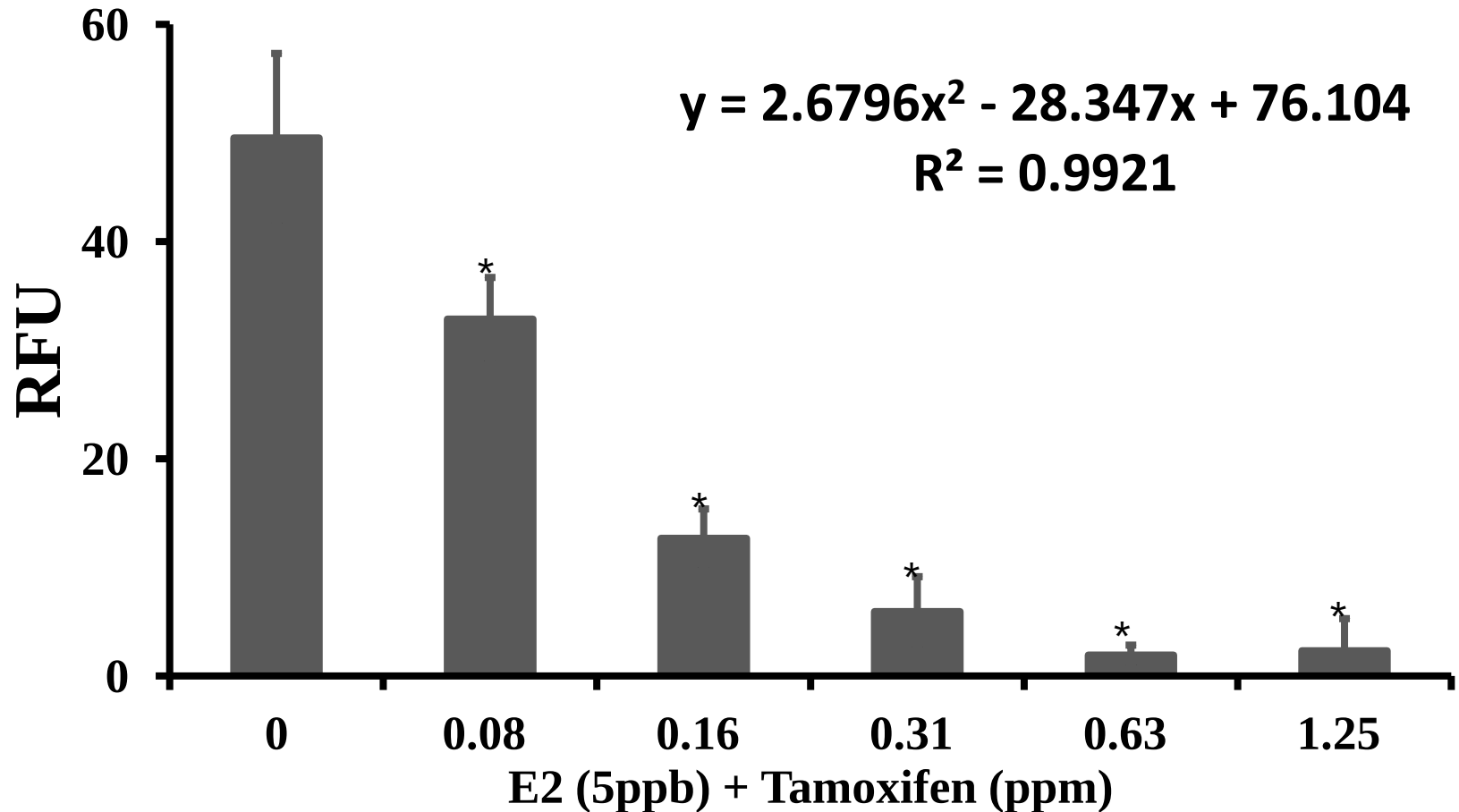
(10,325)

相当于超过**半粒避孕药**活性成分

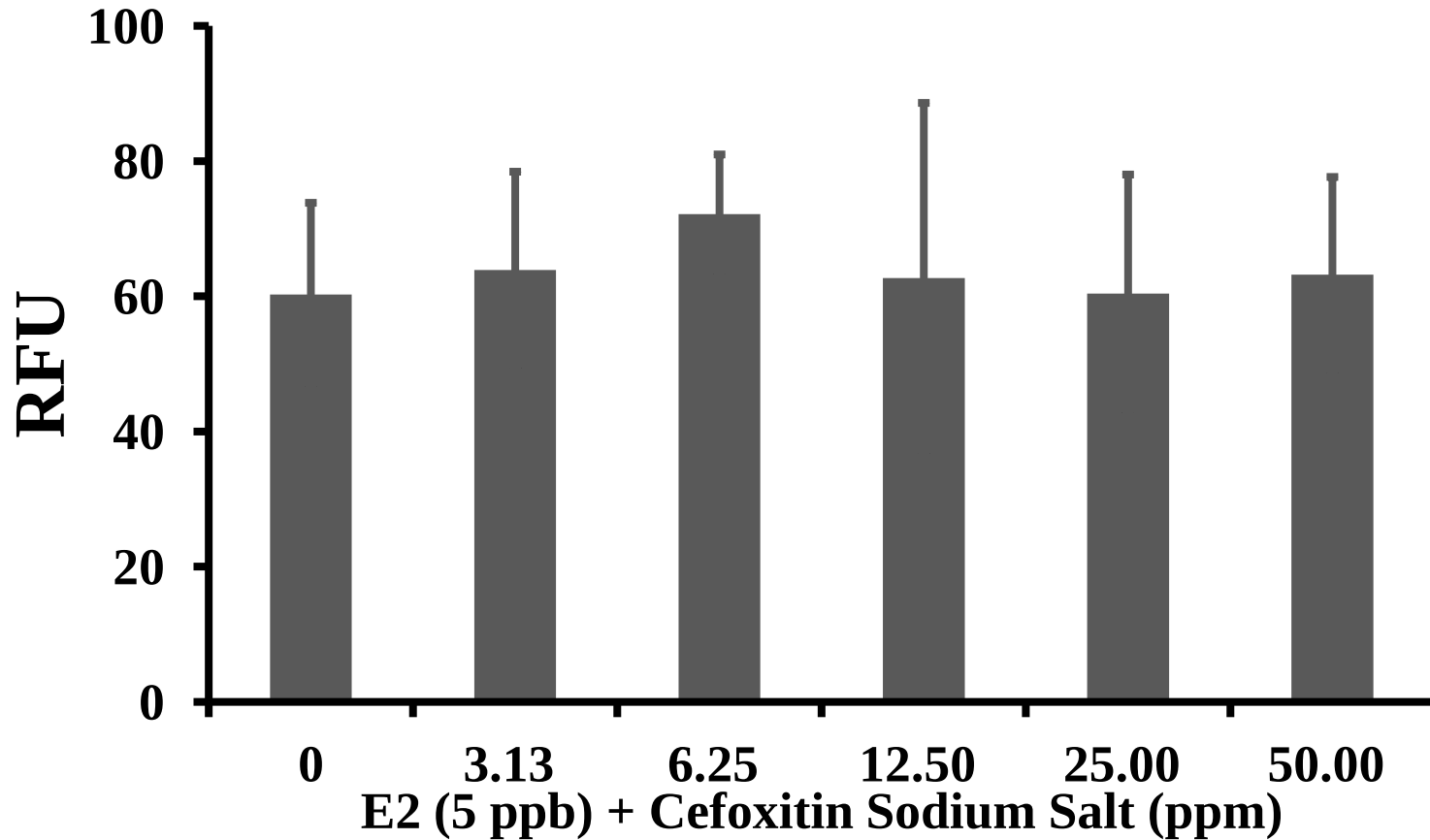
雌激素活性 - 女性保健产品



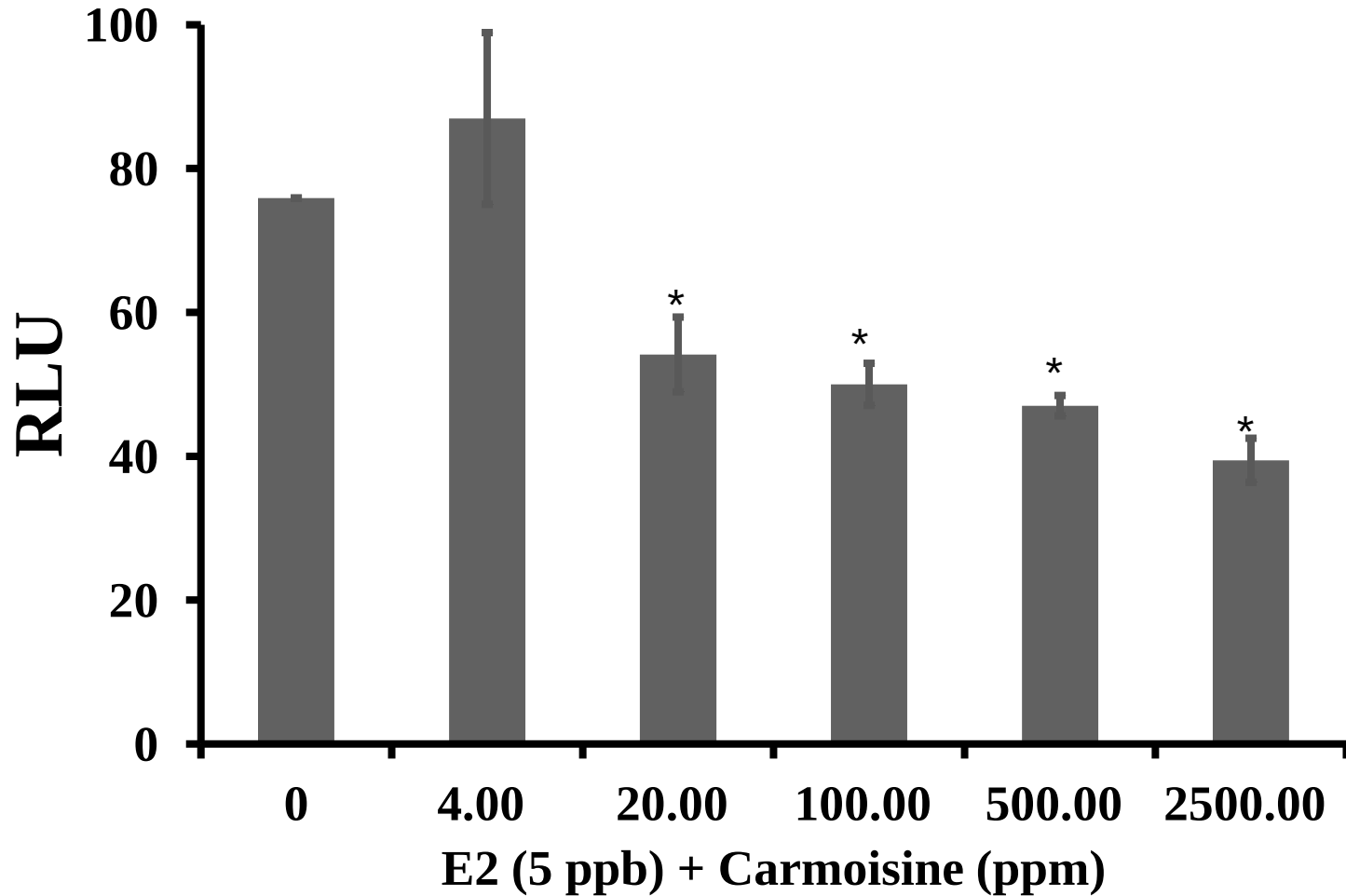
抑制雌激素活性 - 药物



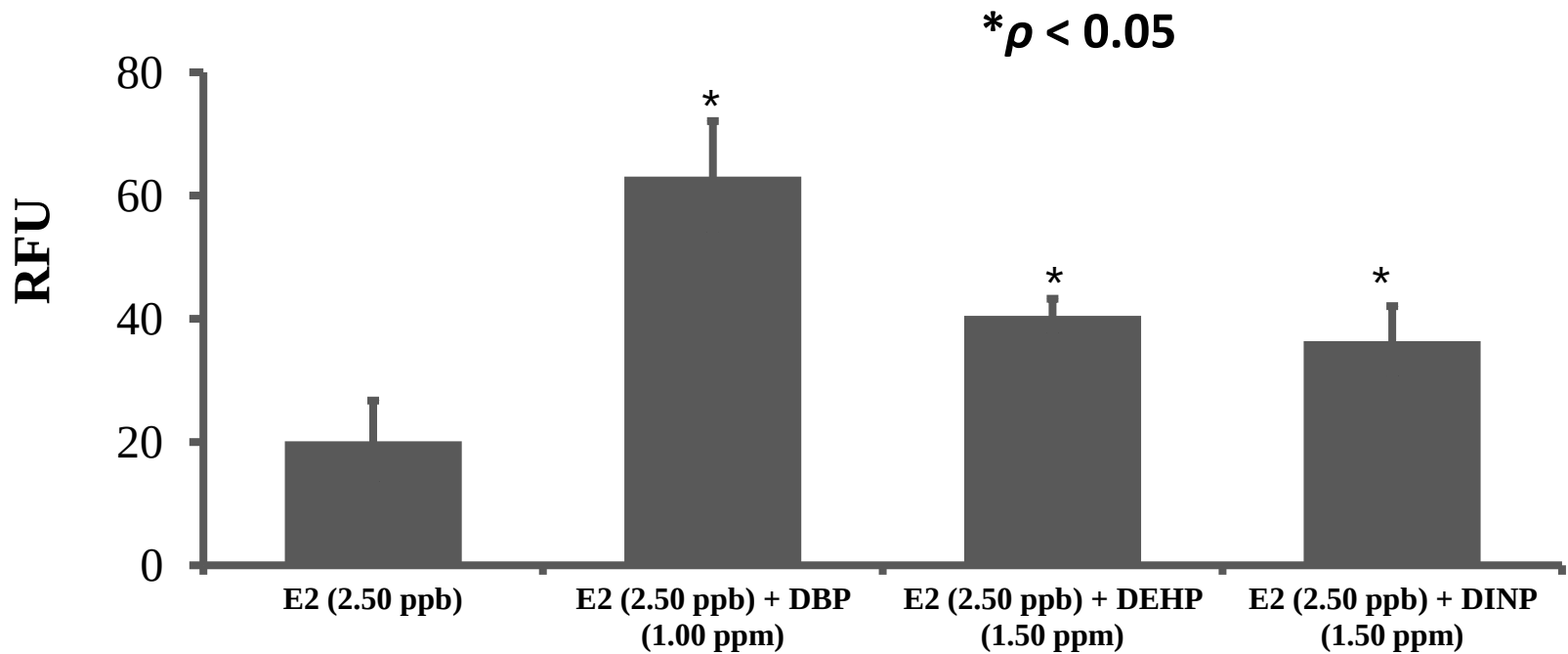
非雌激素活性- 抗生素



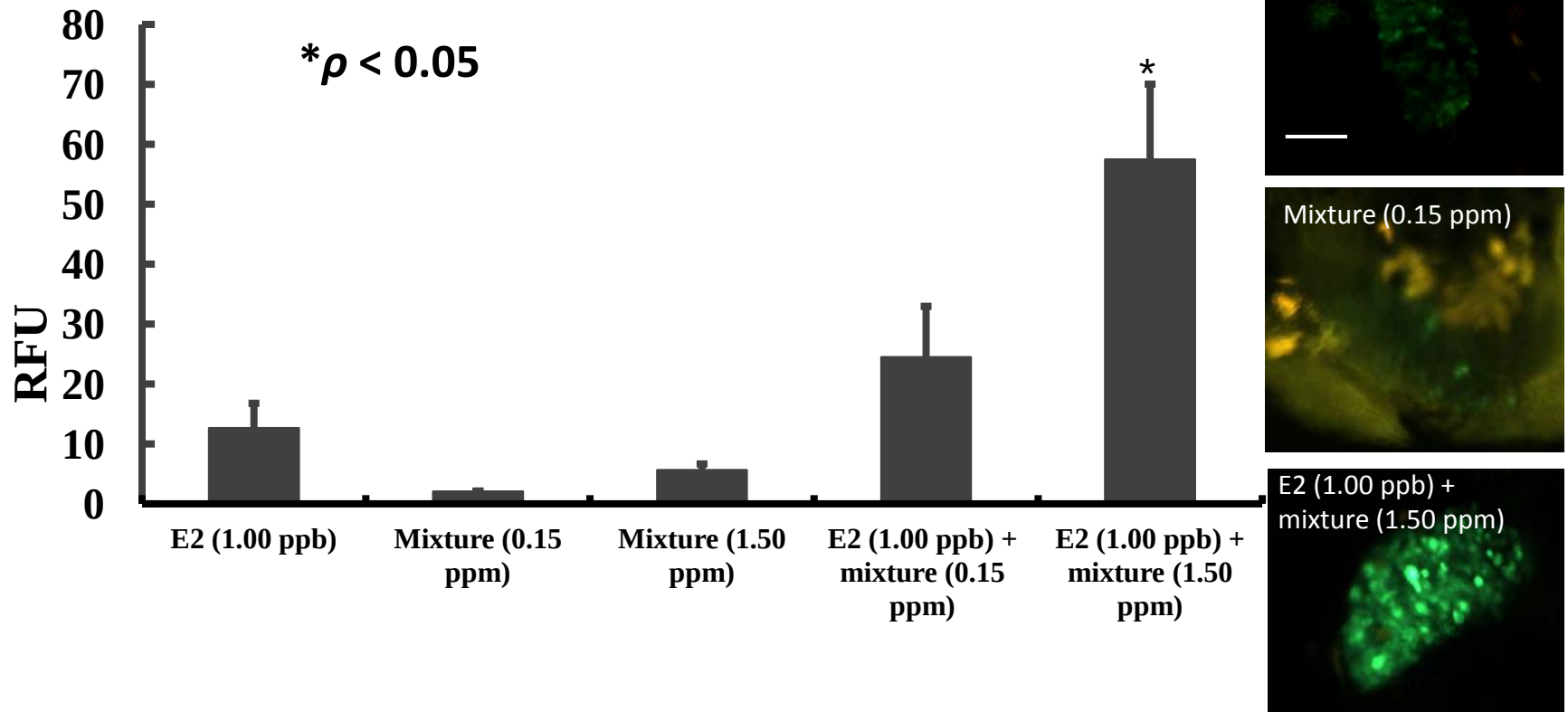
抑制雌激素活性 - 偶氮染料 (食品用)



协同效应 - 增塑剂



混合效应 - 增塑剂的混合物



数据库

- 超过数千个纯化学品和终端产品

Number	CHEMICAL NAME	ALTERNATIVE NAME	CAS #	Detection Limit
1	Estrone	E1	53-16-7	1 ppb
2	17beta-estradiol	E2	50-28-2	1 ppb
3	Estriol	E3	50-27-1	1 ppb
4	17alfa-ethinylestradiol	17 α -炔雌醇	57-63-6	0.1 ppb
5	17beta-ethinylestradiol	炔雌醇/EE2	77835-56-8	0.1 ppb
6	Ethinylestradiol 3-methyl ether	乙炔基雌二醇-3-甲基醚	72-33-3	0.1 ppb
7	Hexoestrol	己烷雌酚	84-16-2	0.5 ppb
8	Dienoestrol	双烯雌酚	84-17-3	0.5 ppb
9	Diethylstilbestrol	乙烯雌酚	56-53-1	1 ppb
10	Genistein	金雀異黄素	446-72-0	1 ppm
11	Daidzein	大豆苷元	486-66-8	1 ppm
12	Daidzin	大豆苷	552-66-9	1 ppm
13	Hesperidin	橙皮苷	520-26-3	10 ppb
14	Synephrine	辛弗林	94-07-5	10 ppb
15	4-Methylbenzylidene camphor	4-甲基亞苄基樟腦/4-MBC	36861-47-9	100 ppm
16	Benzophenone-3	二苯甲酮-3/BP-3	131-57-7	100 ppm
17	Butylbenzyl phthalate	丁基苄基酯/BBP	S0704-18	1.5 ppm
18	matrine	苦参碱	519-02-8	1 ppm
19	Bisphenol A	雙酚A/BPA	80-05-7	1 ppm
20	4-Nonylphenol	壬基酚聚氧乙烯/4-NP	104-40-5	1 ppm

市场应用

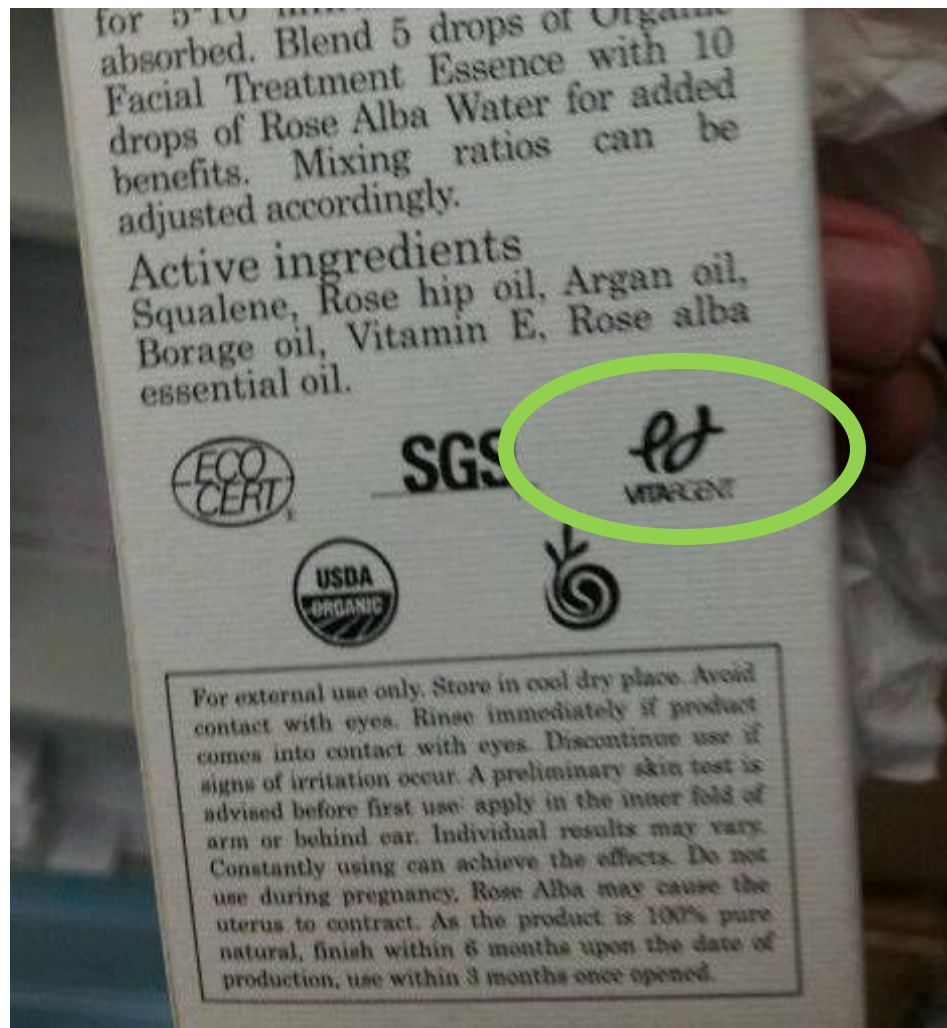
- 化妆品及护肤品（从原材料到终端产品）
- 环境样品（水及沉积物）
- 食品和饮料（肉类，乳类制品，海鲜，淡水产品）
- 药品及补品（所有种类）



认证（产品应用）



雌激素安全



防患于未然（内分泌干扰素）

Do not use the 17 EDCs		Will not phase out the 17 EDCs
Activis Alson Aloe Vera Group Alva Apotekets Solserie Apotekets Hudpleje Apotekets Babypleje Australian Bodycare Badeanstalten Balance Me BIOselect Botanical Extracts Careful Cerudan Cattier Paris Cliniderm COOP (kun egne produkter) Cowshed Dansk Kosmetik Salg Derma Dr. Hauschka Estelle og Thild Florascent Parfume Green & Passion Honoré des Prés Parfume HH Simonsen IKEA Irmas KIBIO Jeune Jurlique Logona	Olive (Alison) Organic Apoteke Plaisir REMA 1000 (Organic Circle) REN Rudolph Care Sanex Santé Suki skin care The Organic Pharmacy Tusindfryd (Irma) Tønnesen Urtekram UVBIO Weleda Youngblood Zenz Organic Products Zinobel If you want to be sure to avoid EDCs in cosmetics and personal care products, choose Swan labelled products.  www.ecolabel.dk	Astellass Pharma Biotherm (Via L'Oréal) Faaborg Garnier (Via L'Oréal) GlaxoSmithKline Helena Rubinstein (L'Oréal) H&M Huggies Kérastase (Via L'Oréal) Kiehl's (Via L'Oréal) Lancome (Via L'Oréal) La Roche-Posay (Via L'Oréal) L'Oréal Lush Matrix (Via L'Oréal) Maybelline (Via L'Oréal) Molton Brown Ole Henriksen Oriflame Piz Buin Reckitt Benckiser Redken (Via L'Oréal) Revelon Schwarzkopf Simple The Body Shop Veet Vichy (Via L'Oréal) WE-HA Yves Saint Laurent (Via L'Oréal)



GREENPEACE



做好准备沒有???



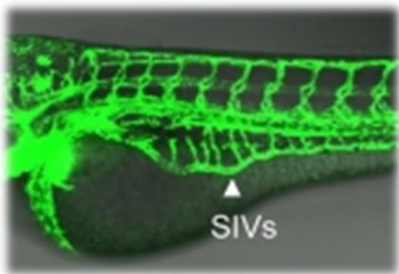
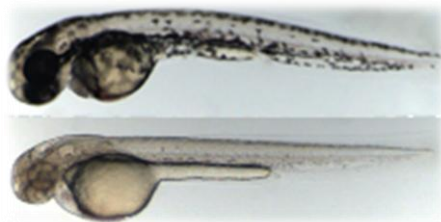
我们提供的服务

- 实验室检测服务：作为第三方国际官方认可的实验室，水中银可以为您的原料，半成品与产品进行检测。我们可以提供雌激素快速定性检测，雌激素定量效应，促进、抑制雌激素效应等多样化，个性化的专业检测方案。
- 雌激素安全认证计划：水中银联合香港标准检测中心与香港安全认证中心，为您通过检测的产品颁发与注册“雌激素安全”标签，表明您的产品的雌激素含量符合FAO/WHO对日摄入雌激素量的建议，使您的产品即刻从市场上脱颖而出。
- 授权特许经营：水中银可以与您的研发部门在您公司内部设立实验室，并培训相关技术人员使用我们的检测方法。

其它服务



Zebrafish (*Danio rerio*)



- 鱼胚胎毒性测试 ISO15088 – 国际认证 GB/T21807

- OECD TG 212: NOAEL 测试（没有可观察到的不良影响值）-REACH 要求

- 皮肤美白测试
- 减肥功效测试

- 心脏毒性测试
- 促进/抑制血管生成测试
- 神经毒性测试

持续创新

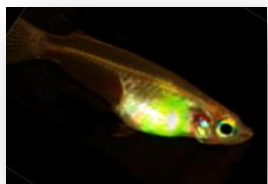
2010

2011

2012

2013

2014



雌激素干扰素



重金属



甲状腺干扰素



二噁英



持久有机物



藻毒素

总结

- 消费品中广泛存在**雌激素干扰素的事实**已经促使了大集团，规管机构和立法机构进行改革
- 建议对您的产品进行风险预测以防患于未然
- 我们认证的实验室已在为您的一些国际同行提供经济，专有的非动物测试服务
- **欢迎**任何形式（商业/学术）的合作与伙伴关系的R&D
- 欢迎即时与我们联系，**水中银**经验丰富的科学家们将为您提供专业的最近服务

联系

- 水中银（国际）生物科技有效公司
- 网址：www.vitargent.com
- 电话：**(852) 2393 2343**
- 传真：**(852) 2393 7922**
- 邮件：jimmy.tao@vitargent.com



欢迎提问?