



## LILI'S NEW CHEM

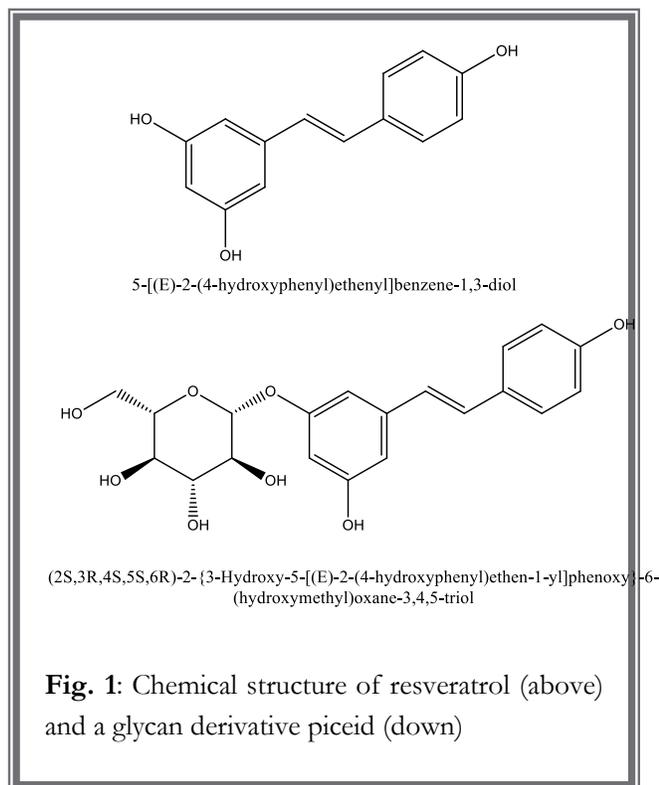
### COLORATURA<sup>1</sup> OR COLORONATURA<sup>2</sup>

Today I would like to present one of my pigments based on resveratrol (a polyphenol, see Fig. 1. and/or their derivatives with a metal alkoxide by mechanochemistry according to my pending patents.<sup>3</sup>

I am delighted to show you my innovations around resveratrol (5-[(E)-2-(4-hydroxyphenyl)ethenyl]benzene-1,3-diol), a compound of the stilbenoid family of polyphenols and a secondary metabolite that can be found in many foods (e.g., grapes, mulberries), beverage (e.g., wine) and plants (e.g. lily, white hellebore, Asian

but imported to Europe as ornament and now a headache for many governments<sup>4</sup>—e.g. *Polygonum cuspidatum/fallopian japonica*; many conifer species e.g. *Picea* and *Abies*; *Eucalyptus sideroxylon*; *nothofagus*; *vitis vinifera*; melinjo (*Gnetum genemon*); peanut; soy; together with other polyphenols. It is to notice that resveratrol can be recovered/extracted from the waste/biomass of the wine production since they are present in the skin of the grapes—grape skin/grape seed biomass contains 5-10 % of resveratrol according to GRAS. Furthermore, resveratrol like many other polyphenols can be synthesized in the lab and the powder has an off-white color to cream color. The biomass containing resveratrol contains different composition and is generally obtained from the plants parts or the rest of the production e.g. wines. *Polygonum cuspidatum* has the highest amount of resveratrol according to many risk assessments.<sup>4</sup>

There are many potential of resveratrol as medicament or drug. However, it is still not approved as “General Recognized as Safe or GRAS” by FDA in general. It is approved as GRAS as nutrient in bottled water (up to 10 mg/l).<sup>5</sup> Claims about health benefits such as treatment or prevention of diseases from resveratrol as a food or food supplements are needed to be register and this process is long and expensive. European Food Safety Authority (EFSA) okayed the safety concerns of synthetic resveratrol from DSM but no its efficacy as cardiovascular or diabetic help.<sup>6</sup>



knotweed/*Polygonaceae* family—original from Asian

Resveratrol as many others polyphenols, e.g. curcumin, suffers from the scientific misconduct incidents concerning the pharmaceutical use.

The first scandal was in 2004 with a Harvard University Professor, Dr. David Sinclair, concerning about the longevity claims of resveratrol. Sinclair created its company to develop resveratrol-based antiaging drugs. In the hype-phase he sold its company to GlaxoSmithKline in 2008 for 720 million. However it turn out that the longevity claims were not well funded and that Dr Sinclair has some connections with other suspected of fraud around resveratrol research, Dr. Dipak Das

In 2012, a scientific fraud of Dr. Das was revealed by the University of Connecticut Health Center after three years of investigation. The university himself sent letters of concern to the journals regarding data fabrication and falsification of the Dr. Das and frozen research activities and money from private and governmental funding.

On “retraction watch” more than 20 publications authored by Dr. Das regarding resveratrol were retracted. Dr. Das was editor in chief or associated editor of many of these journals.

Dr Sinclair and Dr. Das certainly met each other but Dr. Sinclair got some kind of amnesia in one interview by The New York Times. Obviously, resveratrol companies/researcher wanted to distance from bad reputation. Retraction Watch<sup>7</sup> demonstrate that they indeed worked together and that Dr Sinclair and others cited the work of Dr. Das.

Dr. Das was a professor, an influenza and did won a lot of prizes regarding his research.

Dr. Sinclair from the GSK Company and many other companies were afraid of being tilted of misconducting ...and GlaxoSmithKline as well and therefore decided to close the door of the company.

It is pity that many renamed researchers use their renamed institutes and their rename prizes to commercialize many molecules with doubtful or unproved health claims in humans, most without

conflict-of-interest statements. Umh...uff... Viva the transparency!

Just type resveratrol and retracted and you will see the recent paper retractions regarding resveratrol. The history does not have any end.

Claims about safety of supplements —but not medicines— can be made by using toxicological studies in USA. However, claims about efficacy in humans need to pass clinical trial in humans (and not in mice). Pharmaceuticals and not supplements must be demonstrated both safety and efficacy before being marketed. Supplements cannot advertise health claims otherwise they get in trouble with FDA or EMA. It is very tricky and people always use tricky wording to pass legal issues....an there is a lot of money inside the game.

Many natural products are consumed for centuries most without risk. They suffer from poor absorption or bioavailability. The pharm firms tried desperately to show some kind of benefits; however, at the end of hundreds of clinical trials no good results are obtained. The more recent clinical trials of resveratrol are in Japan for the treatments of mild periodontitis. The results are still pending since 09/05/2019.

Just take a look of this repost about medicaments or supplements with uncertain promises. <https://khn.org/news/a-fountain-of-youth-pill-sure-if-youre-a-mouse/>

In my point of view, it is better to try to enhance the properties of the natural product by changing the structure in one or another way chemical or physicochemical or mechanochemical but not physically alone.

Thus, the meantime, colored chemical entities such as pigments and dyes from Resveratrol can be produced by my novel process to be used for many uses such as cosmetics, pigment and dyes for artists' painting (Fig. 2)

These colorants have the potential to replace the use of the most toxic synthetic red/orange colorant from petroleum. You will see that that one of my novel resveratrol metal complexes, have a red/brownish red color that resembles the color of red wine (Fig. 2).



**Fig. 2:** My new material based on a biomass containing resveratrol. Today, I made wine from *Polygonum* tree but not from the lilac tree!

*"I made wine from the lilac tree*

*Put my heart in its recipe" lilac wine by Nina Simone*

Best wishes in the women's day

*Liliana Patricia Ramirez Rios on the women's day.*

Welcome to coloronatura or color derivated from natural by green chemistry.

## ON A NEW RED PIGMENT/DYE FROM RESVERATROL

Resveratrol is a polyphenol with a stilbene group i.e. an stilbenoid. It is an stilbene bearing three hydroxyl groups (see Fig.1).

Resveratrol (or trans-resveratrol) and its derivatives commonly in the form of a glycan (glycosides which are joint to his structure) can be produced by genetically modified *S. Cerevisiae* (in EU since 2012) or by extract from the *poligonum cuspidatum* (in EU since 1997). It is used as a food supplement or food ingredient as ingredient for cosmetics. In addition, resveratrol and his derivatives are used as potential drugs for treating cancer and as an antibacterial. Resveratrol is traditionally used as treatment of psychiatric disorders as well. Hundreds of benefits are attributed to resveratrol. However many studies are only made in mice or rats. Forcing rats to swimming under the effect of resveratrol and concluding that resveratrol has significant effect in the central nervous system without affecting the locomotor activity is one example of such studies. Thus, the rat can swim at certain doses of resveratrol. Some studies/trials have been made to demonstrate the suppression of the secretion of hepatitis B virus surface antigen by a cell line *in vitro* of my plants of the polyginaceae family containing stilbenoids.<sup>8</sup> Experiments are designed for demonstrating anti-aging effect as well in mice. Nevertheless, the health benefits in humans are still to be proven by reliable clinical trials.

In the meantime, herewith, I would like to present my new red pigment/dye based on the simple biomass from the nature containing resveratrol—no protecting groups nor leaving groups nor any other working groups<sup>9</sup> are intentionally created or designed—or any of its derivatives that it is very stable to light, storage, temperature, etc. (see Fig. 1). The way to produce this new red pigment/dye is very simple, rapid and environment-friendly, since no organic or aqueous solvents are added and no waste or (toxic) byproducts

are produced. The process to produce my dyes is so simple and rapid that it might be well serve to visualize a chemical reaction to primary students like making mehndi with the reaction paste in an intermediate state for skin dyeing complexation.

Just imagine that millions of tons of resveratrol that can be found in nature, or extracted from the nature, or produced in the lab or produced by genetically modified bacteria or plants can be converted to a gorgeous red pigment/dye with several shades for instance reddish brown in only a few minutes with several applications



**Fig. 2:** my new material based on a biomass containing resveratrol

for instance for replacing many toxic red dyes containing toxic metals such as lead, arsenic or mercury.

This new resveratrol colorant or the process to produce it can be used as a dye or hair dyeing technique such as the *in loco hair dyeing complexation* (see my patent applications WO/2021/121647 and WO/2019/238261



**Fig. 3:** My working group playing with my compounds from resveratrol and other stilbenoids according to my pending patents

for more details and Fig. 3). Thus, red wine to dyeing your hair according to my inventions can be used. Resveratrol can be used as a red colorant to



**Fig. 3:** White egg and painting after dying using the dyeing technique with resveratrol and/or derivatives according to my pending patents, i.e. Lili's new chemistry.

avoid/replace the toxic red dyes as mentioned above for instance, commonly used in conventional oxidative hair dyeing.

In addition, this new resveratrol metal complex can be used as a dye or pigment to paint your creations.

I am preparing the eggs for Eastern and a paint 'on hearts' with my dyes and pigments based on my team work (see Fig, the heart in the right down corner).

I believe that my portfolio of innovations on **doctora liliانا cosmetics** can alleviate the headache of many governments concerning the alien species in a sustainable way. Thus, a way to valorize the biomass of alien plants are ready to be used without using herbicides e.g. glyphosates; insects, or fungi or thermal treatments; and expensive conventional extractions, etc. Instead of spending a lot of money in those way of eradication of these invasive plants, some money can come from the plants themselves in form on novel products/materials with many applications.

Let's continue with Nina Simone

*It makes me see what I want to see...*

*And be what I want to be*

*When I think more that I want to think...*

<sup>1</sup> A song of Cold Play or an melody full of colors, shapes and flavours, i.e. ornaments.

<sup>2</sup> Coloro naturaleza o coloronatura my new word

<sup>3</sup> WO/2021/121647 and WO/2019/238261

<sup>4</sup> <https://pra.eppo.int/pra/57811520-5050-49ae-bc06-3c21c26a2770>; <https://pra.eppo.int/>

<sup>5</sup> <https://www.cfsanappsexternal.fda.gov/scripts/fdcc/?set=GRASNotices&id=224>

<sup>6</sup> <https://www.efsa.europa.eu/en/efsajournal/pub/4368> ; <https://efsa.onlinelibrary.wiley.com/doi/abs/10.2903/j.efsa.2016.4368>

<sup>7</sup> <https://retractionwatch.com/category/by-author/dipak-das/>

<sup>8</sup> Goto, W, Kusumoto IT, Kadota S. et al. (1996). Suppression of hepatitis B virus surface antigen secretion by traditional plant medicines. *Phytother Res*, 10:504-507

<sup>9</sup> My working group is only I, me and myself. Am I arrogant? Not, I am a scientific woman working in solitude!

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