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Ancient *vs* Modern Cosmetic/Medical Formulations

Morganti P[1,2,*], Visentin P[1] and Chen HD[3]

[1]*R&D Center, Nanotechnology Unit, Academy of History of Healthcare Art Rome, Italy*
[2]*Dermatological Department, China Medical University, Shenyang, China*
[3]*Department of Dermatology, The first hospital of China Medical University, Key lab of Immunodermatology, National Health Commission/Ministry of Education, Shenyang, China*

[*]**Corresponding author:** Morganti P, P, R&D Center, Nanotechnology Unit, Academy of History of Healthcare Art Rome, Italy; E-mail: pierfrancesco.morganti@iscd.it

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Abstract

In 1716 the "speziale" (chemist/ doctor) Fr Domenico Auda described the deep knowledge necessary to treat the patient' disease by medical Art and the related cosmetic and medical formulations. Just as today, in fact, many years of research and studies of worldwide scientists have been and are necessary to make effective formulations, remembering the poor knowledge on chemistry, biology, physiology and pharmacology of that time also. However, during the last five hundred years, medical and cosmetic techniques and formulations have been completely changed, also if the majority of the natural ingredients used in the ancient periods are the same utilized until today. Nevertheless, the toxic ingredients, such as some heavy metals are no more used and, by the introduction of novel technologies, including nanotechnology and bionanotechnology, effectiveness and safeness of the final products have been increased, because based on the actual more deep knowledge in chemistry, biochemistry, biology physiology, pharmacology and toxicology. In any way, it is interesting to underline that we are applying the same ethic conditions reported by the "consciencia" (knowledge and conscience) and utilized into the ancient "speciaria" (chemist shop/hospital) also. Nevertheless and differently from the past centuries, the new selected technologies resulted all necessary for making more effective and safe the actual drugs, cosmeceuticals and nutraceuticals. By the paper we are trying to give an idea on ancient cosmetic/medical formulations, compared to the today ones, made by innovative technologies.

Keywords: Ancient "secreti"; Ancient formulations; Medical art; Wellness; Health cosmeceuticals; Nutraceuticals; Nanotechnology; Innovation; Tissue-carriers

Introduction

Active ingredients and carriers of novel drugs, cosmeceuticals and nutraceuticals are actually made by specialized gel and emulsions prevalently made by natural green micronano molecules and polymeric composites which, necessary to realize more effective products, are able to facilitate their penetration through the skin and mucous membrane' barriers [1-4].To obtain the best results, skin and environmentally-friendly products have been realized by many research studies reported for years from scientists of different disciplines coming from different Countries [5-7].The best novelties, in fact, are always due to the capacity to solve problems and find new solutions by the R&D capacity of the involved people [8,9]. Therefore, years of studies and a worldwide interdisciplinary cooperation was and is at the basis of the progress and innovation [1-9].

Consideration on the Ancient Medical Art

At this purpose, it's interesting to underline that various innovative products were formulated since the ancient periods, by years of R&D' worldwide cooperation .Thus some cosmetic and medical formulations, realized in the year 1716-1736 from a famous "capo special" (chemist/doctor) Fr Domenico Auda, will be reported as meravilous cosmetic/medical secrets (Figure 1) [10]. Domenico Auda ,in fact, introduced the book-reader to many formulations, reporting the three main conditions necessary to everyone wishing to practise the medical Art of ("l'arte della

Speciaria"): therefore they should have the capacity and conditions to realize the designed formulations, possessing the relative knowledge also("volere, poteree sapere") (Figure 2) [10]. All these three conditions are necessary to practice the medical" Art" ("e' necessario haverle tutte tre insieme") because if the medical doctor is "ignorant", he isn't believed from the patients. At this purpose the monk declared: I personally tried to range the reported three conditions, according to my possibility, for the need to make the medical Art at the best, as it has required ("Io per quanto mi fu possibile procurai d'haverle tutte e tre insieme per fare bene l'arte, come si richiede") Figure 2 [10]. The first condition was "to will" ("il volere fu il primo"); the knowledge was the second ones ("Il sapere fu il secondo"). However, to obtain and realize the second step, I had to learn the medical Art with a lot of difficulties, visiting during ten years different world' locations in France, Lombardy and Italy, where finally I started to work in the Saint Spirit Hospital' office in Rome("Il sapere fu il secondo ,quale imparai con molte fatiche , patimenti ,e stenti per lo spatio d'un deci anni, camminando diverse parti di Francia, Lombardia e Italia, riducendomi finalmente nella Spetiaria dell'hospedale di San Spirito in Rome ") (Figure 2) [10]. By this ancient book, it is interesting to verify the possibilities and by which teachers Fr Domenico Auda had to learn the art of medical/ chemistry, necessary to develop the many prescriptions reported into the four books (10). He had as wise teaching Fr. Hippolito Mancini who, very expert in medicine, anatomical surgery and pharmaceutical science, had a deep knowledge on the natural ingredients also (Figure 3) [10]. Consequently Fr Domenico Auda had the possibility to learn the main necessary characteristics described and posssessed from 1500 ingredients, useful to be used for trying to solve many different diseases or beauty problems regarding the precociously aged skin also. At this purpose, different prescriptions are reported and discussed by four books with the advertisement to use each of them in the right way to avoid the possible toxic side effects. It has been affirmed that the reported secrets have to be considered true and approved, also if often the time could result not sufficient to solve the problems, first of all when the disease hasn't been well diagnosed: "Li secreti sono veri & approvati, se alcuna volta non riescono procederà forse, perché non si sapranno applicare a tempo, non conoscendo il male….". The wise conclusion reported by the book II is that: "no one has to use these secrets before understanding the problem and without a medical opinion"("Nessuno dunque metta in pratica detti secreti prima di sapere quello che fa, pigliando avanti parere da Medici". (Figure 3) [10]. After these first considerations some cosmetic and medical prescriptions are reported, just to understand the level of knowledge ranged during the XVII and XVIII century

Cosmetic and Medical Art of the XVII Century

The author precedes his formulations with a long preface on the condition necessary to the "Speziale" (Chemist/doctor) for formulating the medical/ cosmetic prescriptions (Figure 4) [10]. At this purpose and as reported on Figure 4, the author enquires himself about the knowledge the Medical doctor has to possess (i.e." Qual'e' l'Ufficio dello Speziale?") And therefore, which the many conditions have to be required to an expert doctor? ("Quante condizioni si ricercano al buon Speziale?) [10].

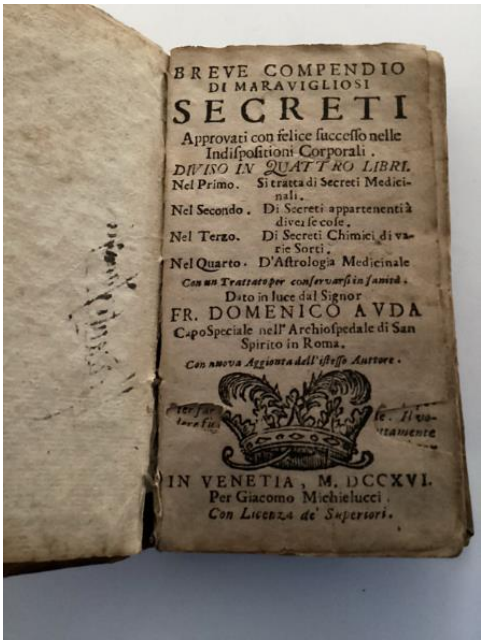

BREVE COMPENDIO
DI MARAVIGLIOSI
SECRETI
Approvati con felice successo nelle
Indispositioni Corporali.
DIVISO IN QUATTRO LIBRI.
Nel Primo. Si tratta di Secreti Medicinali.
Nel Secondo. Di Secreti appartenenti à diverse cose.
Nel Terzo. Di Secreti Chimici di varie Sorti.
Nel Quarto. D'Astrologia Medicinale
Con un Trattato per conservarsi in sanità.
Dato in luce dal Signor
FR. DOMENICO AVDA
CapoSpeciale nell'Archiospedale di San Spirito in Roma.
Con nuova Aggionta dell'istesso Autore.
IN VENETIA, M. DCCXVI.
Per Giacomo Michielucci.
Con Licenza de' Superiori.

Figure 1: *Meravilous "Secreti" (secrets) of Fr.Domenico Auda (Book II) [10].*

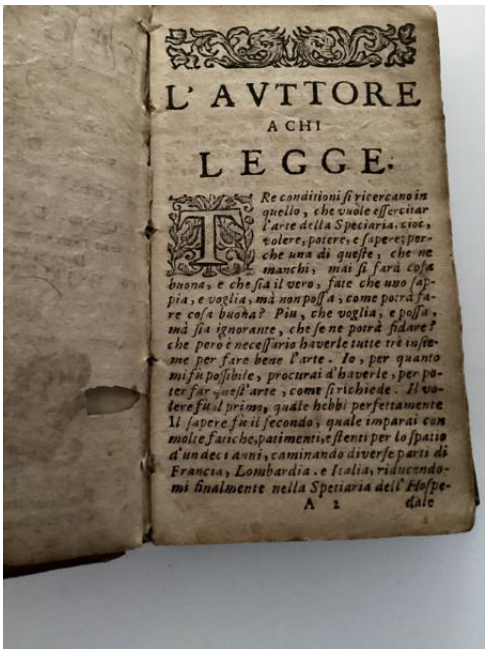
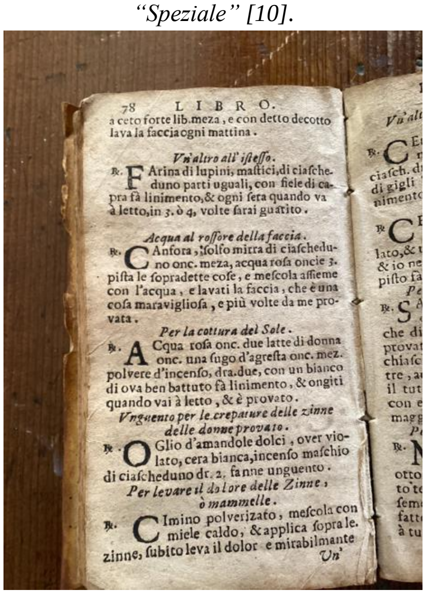

L' AVTTORE
A CHI
LEGGE.
Le conditioni si ricercano in quello, che vuole essercitar l'arte della Speciaria, cioè, volere, potere, e sapere; perche una di queste, che ne manchi; mai si farà cosa buona, e che sia il vero, fate che uno sappia, e voglia, ma non possa, come potrà fare cosa buona? Piu, che voglia, e possa, ma sia ignorante, che se ne potrà fidare? che però è necessario haverle tutte trè insieme per fare bene l'arte. Io, per quanto mi fu possibile, procurai d'haverle, per poter far quest'arte, come si richiede. Il volere fu il primo, quale hebbi perfettamente Il sapere fu il secondo, quale imparai con molte fatiche, patimenti, e stenti per lo spatio d'un deci anni, caminando diverse parti di Francia, Lombardia, e Italia, riducendomi finalmente nella Spetiaria dell' Hospedale

Figure 2: *"L'autore a chi legge" The author for who is reading (book II) [10].*

Figure 3: *The book introduction reported on page 2sd (Book II) [10].*

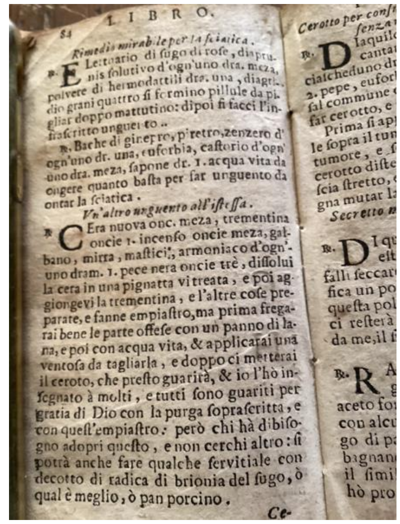
DELL'UFFICIO
DE' SPEZIALI.
La Lettera E, dinota l'Essaminatore, e la Lettera, R, chi risponde.
CAPITOLO I.
E. QUAL'è l'Ufficio dello Speziale?
R. L'arte di ben comporre li medicamenti, per potersi conservare in sanità, con l'ajuto d'essi, e ricuperarla havendola persa.
E. Quante conditioni si ricercano al buon Speziale?
R. Tre conditioni si ricercano al buon Speziale, le quali si rinchiudono in quelle due parole, cioè buona conscienza; perchè havendo lo Speziale buona conscienza, haverà il timor di Dio, alla presenza del quale non farà cosa, la quale non farebbe alla presenza d'un huomo, e per questo sarà pieno di carità verso il prossimo e farà le cose, così ben ordinate ben composte, come se le havesse da pigliar lui medemo. Hora si levi da quella parola conscienzia il con, resterà il scienzia, si che lo Speziale deve esser dotto, cioè deve intendere bene la lingua latina, per poter intendere li canoni di Mesue, & altri libri, che trattano dell'arte di ben comporre, conoscere le droghe, herbe & altre cose necessarie, quali libri sono quasi tutti latini; deve anco sapere, in qual tempo si raccolgano li fiori, li semi, le frondi, le scorze, le radiche, e come si conservino; deve havere cognitione delli vasi, & utensilii necessarii per la speziaria, delli gradi del foco, della destillazione, per tamborlano, per bagno maria, per bagno vaporoso, quali sono necessarii all'arte della speziaria, per farla come si conviene.
Hora si levi da quella parola conscienzia il con, & il sci,
A zelle-

Figure 4: *The conditions requested to be considered an expert "Speziale" [10].*



78 LIBRO.
aceto forte lib. meza, e con detto decotto lava la faccia ogni mattina.
Un'altro all'istesso.
R. FArina di lupini, mastici, di ciascheduno parti uguali, con fiele di capra fà linimento, & ogni sera quando va à letto, in 3. ò 4. volte farai guarito.
Acqua al rossore della faccia.
R. CAnfora, solfo mitra di ciascheduno onc. meza, acqua rosa oncie 3. pista le sopradette cose, e mescola assieme con l'acqua, e lavati la faccia, che è una cosa maravigliosa, e più volte da me provata.
Per la cottura del Sole.
R. ACqua rosa onc. due latte di donna onc. una fugo d'agresta onc. mez. polvere d'incenso, dra. due, con un bianco di ova ben battuto fà linimento, & ongiti quando vai à letto, & è provato.
Vnguento per le crepature delle zinne delle donne provato.
R. OGlio d'amandole dolci, over violato, cera bianca, incenso maschio di ciascheduno dr. 2. fanne unguento.
Per levare il dolore delle Zinne, ò mammelle.
R. CImino polverizato, mescola con miele caldo, & applica sopra le zinne, subito leva il dolor e mirabilmente
Un'

Figure 5: *Example of cosmetic formulations [10].*



84 LIBRO.
Rimedio mirabile per la sciatica.
R. ELettuario di fugo di rose, diaprunis solutivo d'ogn'uno dra. meza, polvere di hermodattili dra. una, diagridio grani quattro si formino pillule da pigliar doppo mattutino: dipoi si facci l'infrascritto unguento.
R. Bache di ginepro, pirettro, zenzero d'ogn'uno dr. una, euforbia, castorio d'ogn'uno dra. meza, sapone dr. 1. acqua vita da ongere quanto basta per far unguento da ontar la sciatica.
Un'altro unguento all'istessa.
R. CEra nuova onc. meza, trementina oncie 1. incenso oncie meza, galbano, mirra, mastici, armoniaco d'ogn'uno dram. 1. pece nera oncie trè, dissolui la cera in una pignatta vitreata, e poi aggiongevi la trementina, e l'altre cose preparate, e fanne empiastro, ma prima fregarai bene le parte offese con un panno di lana, e poi con acqua vita, & applicarai una ventosa da tagliarla, e doppo ci metterai il cerotto, che presto guarirà, & io l'hò insegnato à molti, e tutti sono guariti per gratia di Dio con la purga soprascritta, e con quest'empiastro: però chi hà dibisogno adopri questo, e non cerchi altro: si potrà anche fare qualche servitiale con decotto di radica di brionia del fugo, ò qual è meglio, ò pan porcino.
Ce-

Figure 6: *Example of ancient medical formulations [10].*

Figure 7: *Global Wellness Economy.*

Therefore, three conditions result comprised in two words, such as necessary "conscience" composed by "con"(with) and "science" Therefore, the expert "speziale" has to possess a good knowledge of the Latin language, knowing spices, herbs and all the tools necessary to his office/lab ("Tre condizioni si ricercano al buon Speziale, le quali si rinchiudono in quelle due parole ,cioe buona conscienzia….si che lo Speziale deve esser dotto…intendere bene la lingua latina…conoscere le droghe,herbe..& utensili necessary per la speziaria") [10]. It's interesting to underline the author' fear of God so the needs of the patient has to be considered just as the personal ones (avendo lo Speziale buona conscienzia. havera' il timor di Dio …e fara le cose…come se le havesse da pigliar lui medemo"). Just as an example some cosmetic and medical formulations are reported on Figure 5 and 6 by which the same today skin problems we has been are focused. At this purpose Domenico Auda advised the use of a special water for the skin' redness and erythema due to an excessive sun exposure. Formulations 2th and 3rd, such as Water for the skin redness ("Acqua al rossore della faccia" and per "La cottura del Sole") were

considered useful to solve both the problems as well as the formulation 4th, seems to be able to eliminate the pain of the breast.

Ancient Cosmetic formulations (Figure 5).

Acqua al rossore della faccia

Canfora, solfo, mirra di ciascheduno oncie meza,acqua rosa oncie 3. pista le sopradette cose,e mescola assieme con l'acqua

e lavati la faccia ,che e una cosa meravigliosa ,e più volte da me provata

Water for the face' redness

Camphor, sulphur, myrrh half ounce.rose water ounce 3.pound and mix all together by water and wash your face,that is a wonderful way, and for more times I gave a proof personally

Per la cottura del sole

Acqua rosa onc. Due latte di donna onc.una sugo d'agresta onc. mez.polvere d'incenso,dra.due,con un bianco di ova ben battuto fa' linimento,& ongiti quando vai a letto,& è provato

For the sun erythema

For the erythema sun-provoked Rose water ounce two,women-milk ounce one.unripe grapes juice half ounce. incense powder drachma two, with one white-egg well beaten .make a liniment & and smear skin before going in bed. & it is proven.

Per levare il dolore delle Zinne

Cimino polverizzato, mescola con miele caldo, & applica sopra le zinne,subito leva il dolor e mirabilmente

To eliminate the pain of the breast

Passion fruit powder, mixes it with hot honey, & apply on the breast, soon after the pain go away wonderfully.

Ancient Medical formulations (Figure 6) [10].

Rimedio mirabile per la sciatica

Elettuario di sugo di rose,di prunus solutivo d'ognuno dra.meza.polvere di hermodattili dra una.diagridio grani quattro.si formino pillule da pigliar doppo mattutino:di poi di faccia 'infrascritto unguento..

R. Bache di ginepro, piretro, zenzero d'ogn'uno dr.una,euforbia,castorio d'ogn'uno dra. meza, sapone dr.1.acqua vita da ongere quanto basta per far unguento da ontar la sciatica

Admirable remedy for sciatica

Electuary of rose extract, thorn-apple half drachma, powder of hermodactyls one drachma. diagridium grains four that, made in pills have to be taken during the morning: soon after apply the reported ointment.

R. Juniperberries, pyrethrumpowder, gingerdra. One for everyone, euphorbia, castoreum half dra. For everyone, soap one dra.acqua sufficient to make ointment to apply on the sciatica.

Nanotechnology and Ancient/Actual Cosmetic Ingredients

It is interesting to underline that many of the ancient ingredients are still in use today due to their scientifically proven biological activities, while other are no longer utilized due to their toxicity. For instance, juniper berries is used for their antibacterial, antioxidant and anti-inflammatory activities [10], euphorbia for antimicrobial activity [11], glycyrrhiza glabra for anti-inflammatory and antibacterial activities [12], ginger oil for detoxing and antibacterial activities [13] and so on. Meanwhile, the absence of heavy metals, such as mercury, cadmium and lead are constantly monitored, their use is limited, or they are removed from the cosmetic formulations due to of their high toxicity and risks to human health [14,15]. However, it is important to point out that the advancements in biology and chemistry over the last twenty years have led to innovation in formulations and delivery systems characterized first of all by an increased knowledge and development of Nanotechnology and Bionanotechnology [16-19]. Consequently, more active ingredients and carriers have started to be used at their micro-nanosized dimension. Nanotechnology, in fact, is an emerging area of science, characterizing and involving engineering particles in the size range between 20 and 100 nanometers (nm). Through the use of creative and practical new carriers (vehicles), this dimension favours the cosmetics and diet supplements (cosmeceuticals & nutraceuticals) effectiveness, enhancing penetration and releasing of the active components at the level of the different skin and mucous membrane layers [20-23]. Compared to trational carriers, the modern "Nano-transporters are, in fact,a diverse array of vehicles which serve the dual purpose of both protecting active ingredient payloads and improving their delivery to the skin" [24].

Modern Tissue- Formulations and Technologies Vs Ancient Ones

For this reason, it is interesting to underline that, thanks to the use of new technologies, the actual formulations are more effective and safe, in comparison with the ancient ones [1-17]. For example, the utilization of non-woven tissues as innovative vehicles for cosmeceuticals and nutraceuticals has been proposed recently as novel carriers alternatively to the actual emulsions [2-24]. These novel tissue vehicles, in fact, result differently from the ancient and modern emulsions, being realized by natural polymers embedded by active micro-nano active ingredients. Consequently, they have the great advantage of being produced globally by biodegradable, natural raw materials with a very low consumption of water, being also free of preservatives, emulsifiers, colors, fragrances and other chemicals that are often linked to allergic and sensitizing phenomena [2-27]. As a result, modern technologies advanced year after year, have altered not only the features of products, but also the way of producing and consuming through the advent of the circular economy, retained essential to preserving both natural raw materials and biodiversity of our planet for the future generations [28,29]. This new economy, in fact, based on redesigning, reducing, reusing and recycling every good," where materials

never become waste and nature is regenerated", gives the tools to tackle climate change loss and cutting Greenhouse gas emissions and pollution, contemporary addresses important economic and social benefits [29]. Therefore, the reduction of waste as well as the increase of wellness and beauty became a top priority for consumers, who wish to maintain a healthy body with a healthy diet and environment [20-27]. The healthy and youthful appearance, in fact, has been and is the common desire of both aged and young population who are using cosmeceuticals and nutraceuticals. These innovative products, involving and supporting the skin functions, are considered able to reduce and reverse the signs of aging, including fine lines wrinkles and pigmentary changes [20-27]. Thus, the link between wellness and beauty has increased significantly among consumers and the scientific community, considering significant the recovered relationship between dietary supplements and skin appearance [20-30]. Consequently, it has born the so-called Beauty from Within, based on the use of the same natural ingredients considered useful for maintaining health and beauty from the inside out [29,30]. For this reason, it is interesting to underline that the modern consumers are also looking for scientifically correct and natural- oriented cosme-nutraceuticals made by the same "conscienza" used by Domenico Auda in the year 1716 [2-36]. They, in fact, are showing the same great attention on health, overall health and healthy lifestyle obtainable by the use of the monk'"holistic"self-care [10-32].

Conclusive Remarks

Over the last five hundred years, the integration of cell biology, material science and biomechanics has significantly accelerated the development of biomedical tissue engineering. This is attributed partially to a deeper understanding of nanotechnology and bio nanotechnology [17,18]. By these innovative technologies it has been possible to facilitate the repair of skin and other organs by the so-called tissue engineered regenerative medicine (TERM), also if it seems necessary to have a better understanding of where beauty fits into the wellness picture [17-37].

Is beauty a real component of life and happiness?

For this purpose, genomics, proteomics, tissue engineering, biomaterials and other more recent technological trends such as immersive reality, cloud and edge computing and quantum computing, have been notably developed in the last 30 years [28], while were completely unknown to our ancestors. The development of the previously reported novel tissue-carriers were made by sustainable technologies innovative polymeric films, tissues skin- and environmentally friendly could be included in this innovative category of products. Therefore, these tissues might be considered more effective delivery systems able to facilitate wound healing processes and innovative beauty/surgical masks [38-44]. Consequently, all medical, cosmetic and dietetic formulations (i.e. for example cosmeceuticals and nutraceuticals) have been completely modified to obtain effective, safe and healthy products ,thanks to the progress obtained by the involvement of thousand & thousand scientists working worldwide in many R&D studies. In conclusion wellness, defined today "the active pursuit of activities, choosing a few lifestyles that lead to a state of holistic health", has been able to range a global wellness economy "at USD 5.6 trillion in 2022 amidst the chaos and disruptions caused by COVID-19 (Figure 7) [45]. In conclusion, technological progress has given the possibility to obtain cosmeceuticals and nutraceuticals that, in comparison to ancient products, are known for their great efficacy and safety. However, many of the ancient raw materials and active ingredients are being used today, mixing modern technology into conventional formulas and treatments with the ultimate aim to range the same holistic health and global beauty, searched for centuries from the human community. The spiritual wellbeing, connecting purpose and love and learned from nature and ancient practices has to be considered equally important as quantum physics and the new science-integration technology. Unfortunately, the way of producing and consuming of the modern society, based on the taking, making and producing waste by the so-called linear economy, should be urgently changed by the circular economy based on redesigning, reducing, reusing and recycling possible at zero waste [29]. In whole on the one side, the industrial revolution of the last two centuries has notably ameliorated the global health and beauty appearance, on the other side it is also the main cause of the general and plastic waste that, invading oceans and lands, has provoked and caused the worldwide increase of the greenhouse gas emissions (primarily carbon dioxide and methane) with the consequential global temperature increase, disasters and a shift in the planet biodiversity [46,47]. Therefore and accounting to the principles of regenerative organic agriculture [48,49], it is considered important and urgent to restore the resources of our planet, exploited for too long time. Thus, according to the ancient "holistic" and more healthy way of living, it became urgent to change our way of producing and consuming, trying to obtain biodegradable active ingredients, polymers and packaging materials from the actual organic waste, to safeguard the natural raw materials and the planet' biodiversity for the future generations [50,51].

Author Contributions

Writing-original draft preparation PM; writing review and editing PM, PV, HDC; supervision PM, PV, HDC. All the authors have read and agree to the publishing version of the manuscript.

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Informed consent statement

Not applicable

Data availability statement

Not applicable

Conflict of Interest

The authors declared no conflict of interest.

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