

University of Ferrara

<Since 600 years we look forward >



School of Pharmacy



Ambrosialab



VNIVERSITÀ
DEGLI·STVDI
DI·FERRARA



Tradition and Innovation

“since 1435 we invent cosmetics”



S. Maria delle Grazie cloister. Location of COSMAST



UNIVERSITÀ
DEGLI STUDI
DI FERRARA
- EX LABORE FRUCTUS -

School of Pharmacy and Health Products



Sustainability

Non-Timber Forest Products: Health Ingredients from Renewable Sources

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4. Área de Ciencias de la Vida, Universidad Politécnica Salesiana. Quito. Ecuador.
5. Pharmaceutical Department, Fakulteti Farmacise.Tirane. Albania
6. BaobabFruit Company Senegal, Thies. Senegal
7. D&D Consulting, Venice, Italy

Non-Timber Forest Products: Health Ingredients from Renewable Sources

- Conventional sustainable routes
- Non-Conventional sustainable routes
- Innovative sustainable routes
- Why products for well-being can be so impactful
- Why we have to use soap
- Some examples from our experience

ECONOMIC VALUE AND GROWTH OF NTFPs

- From the economic viewpoint, NTFPs are equally important as wood based products
- NTFPs are especially important to women in developing countries from Latin America to Asia and Africa

NTFPs



NTFPs include Edibles such as Mushroom, ferns etc. medicinal, cosmetics and dietary supplements, floral products and specialty wood products.

Non-timber forest products (NTFPs) are plants or plant parts that have perceived economic or consumption value sufficient to encourage their collection and removal from the forest

Classification

Unlike timber-based products, NTFPs came from a large variety of plant parts and are formed into a diverse set of products. Like timber, NTFPs may further be processed into consumer oriented products.

1. EDIBLE

2. MEDICINAL DIETARY SUPPLEMENTS AND COSMETICS

- FLORAL
- SPECIALITY WOOD



Biodiversity in forest management

>> Non-timber forest products (NTFPs)

- The Millennium Ecosystem Assessment estimates that up to 96% of the value of forests is derived from non-timber forest products (NTFPs) and services (MEA 2005).
- Forests are often the ‘pharmacy’ and ‘supermarket’ for the rural populations.
- Yet, the important role of NTFPs in the national and particular rural economy is often not reflected in national statistics, or in relevant strategies and plans.
- Good forest governance, including clear tenure rights and proper law enforcement, plays a crucial role for the sustainable use of NTFPs. The most successful approaches for governance are based on a ‘tri-partite approach’, with government, civil society, and the private sector jointly agreeing upon necessary reforms and improvements.

Tradition is a Value

- Especially during crytical periods tradition is seen as a value because it remind us what we are, from where we came and how we succeeded from previous harsh hystorical times

DOWNSIZING

- A minimalist approach to the wellbeing
- SMALL IS NICE: to micronize human production activity

Who among you uses liquid soap to wash hands?



BAR SOAP VS. LIQUID SOAP
Which Is Greener?



Our water story

Saving water

Water used in the raw materials source

approx 50%



This is an estimate we need partners to measure the water used to grow the crops we use as raw materials

Water added to the product

<0.1%



This comes from the specifications of average products

Water used by consumers in water scarce countries

50%



This is measured from detailed consumer studies in each category and country

3 Principles

ALL BRANDS
ALL COUNTRIES

LIFECYCLE
IMPACTS

SOCIAL

ECONOMIC

ENVIRONMENTAL

Raw Materials



+

Manufacture



+

Transport



+

Consumer Use



+

Disposal

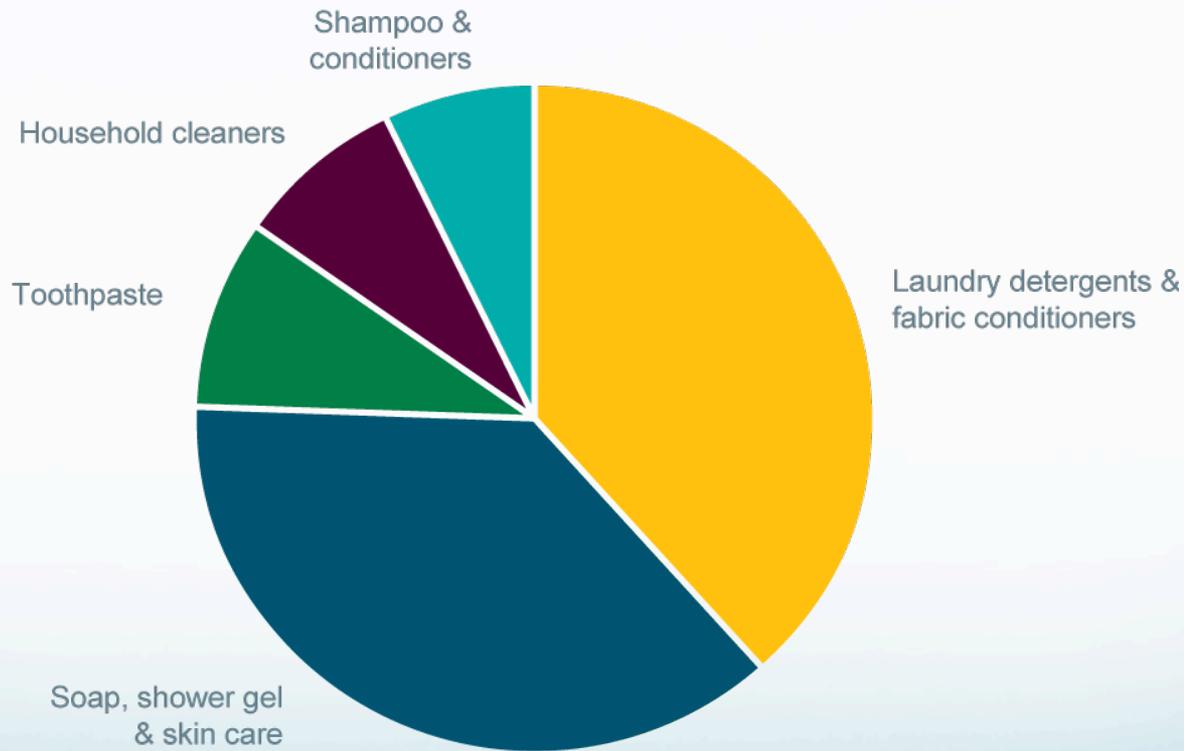


Consumer behaviour change

The screenshot shows the 'Environmental Impacts' page of the Unilever Sustainable Living Plan. At the top, there is a blue header with the text 'UNILEVER SUSTAINABLE LIVING PLAN' and the Unilever logo. Below the header is a large image of a woman and a child washing their hands at a public water tap. A decorative graphic of blue and white squares is overlaid on the image. Below the image is a navigation bar with links: 'THE OPPORTUNITY', 'OUR APPROACH', 'THE PLAN', and 'LIBRARY & RESOURCES'. A search bar is also present. The main content area has a breadcrumb trail: 'Home > Our Approach > Environmental impacts'. The title 'ENVIRONMENTAL IMPACTS' is displayed in large green letters. To the left, there is a 'OUR METRICS' section with icons for 'Health & hygiene', 'Nutrition', 'Environmental impacts', and 'Sustainable sourcing'. Under 'Environmental impacts', there are sub-metrics: 'Greenhouse gases', 'Water', and 'Waste'. Below this is the 'OUR TARGET' section, which states: 'To halve the environmental footprint of the making and use of our products by 2020 on a 'per consumer use' basis. By 'per consumer use' we mean a...'. On the right side of the page, there is a 'PRODUCT ANALYSER' section with a pie chart and the text 'SEE THE DATA BEHIND THE PLAN'. This section is circled in red.

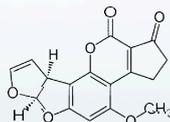
- products and tools to help people use less water when washing and showering
- UNILEVER goal is to reach 400 million by 2020

AMOUNT OF WATER USED PER COSMETIC PRODUCT



Competitive Advantages - Ecology

- **Ecological product:** more efficient and environmental friendly.
- 99,9% water saving.
- 99,7% soil area saving.
- **Highly Certifiable** products
- No GMO.
- Pesticides and herbicides free.
- Heavy metals free.
- VOC free.
- BSE and CMR free
- No aflatoxins.
- 100% vegetable
- Significant reduction Carbon Footprint



Halve the waste of our products

GOOD PRACTICE



REDUCE



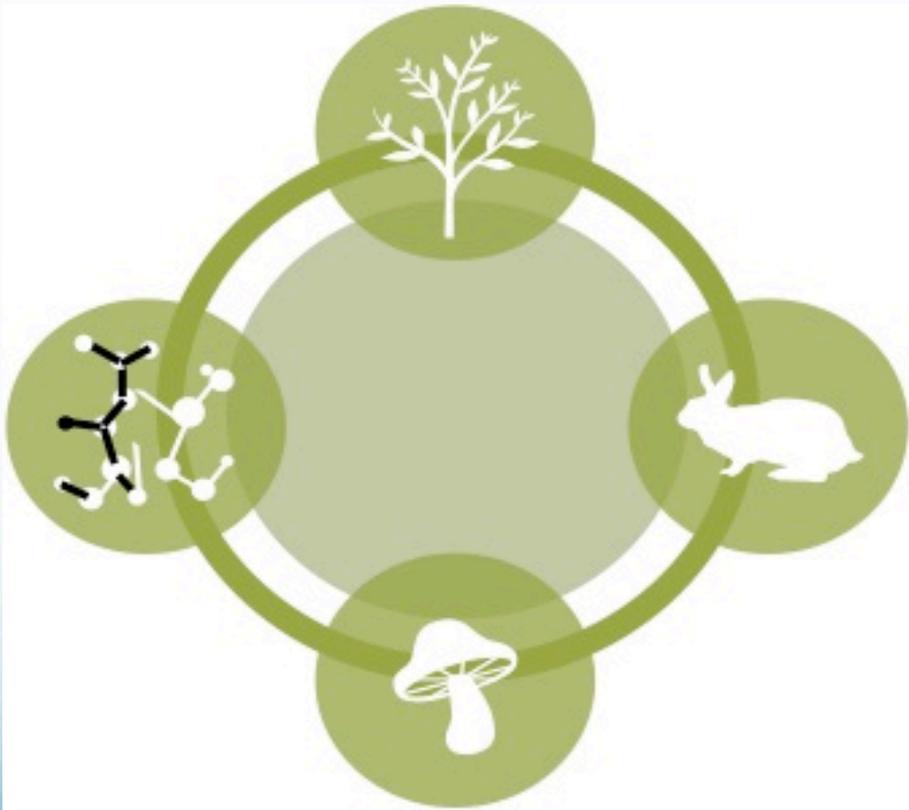
REUSE



RECYCLE

C2C

0% Waste



**Biological
metabolism**



**Technological
metabolism**

SUSTAINABLE FOREST MANAGEMENT, BIODIVERSITY and LIVELIHOODS

Health products



This presentation has been prepared as part of the publication “Sustainable Forest Management, Biodiversity and Livelihoods: A Good Practice Guide”. The CBD endorses the use and modification of these presentation materials for non-commercial purposes. If modifying the presentation materials, photograph credits should be maintained.

Why to change?

- Making truly new, breakthrough advancements in cosmetic/health food is tough.
- Innovative products are often hard for people to understand!
- Is costly
- Is risky
- Regulatory issues



Why H-NTFPs?

New:

Dermofeel[®] viscolid palm oil free

Same story, but exclusively made from rapeseed



Environmental and Health Innovation



- Natural/Organic cosmetics and food products are a form of environmental innovation found very important that all industries would develop their processes to a more environmental way



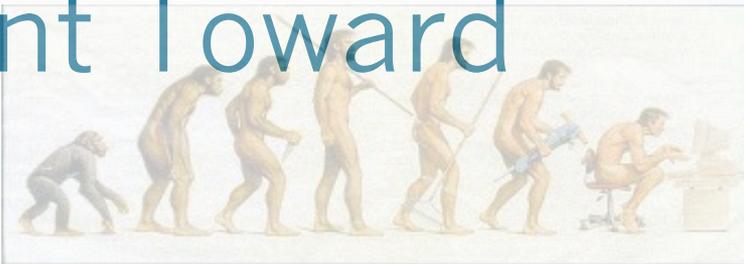


UNIVERSITÀ
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Risk Managment Vs Symtom Managment

Traditional and Natural
Ingredients
Vs
New Chemical Entities
in
NON-LIFE Threatening Problems

Evolutionary Adaptment Toward Natural Ingredients



Irgendwo lief irgendetwas falsch...

The evolutionary process of organisms that led to the human species took place over millions of years, in the presence of molecules produced by other organisms and to which we adapted

3.7 mill BC
Australopithecus



563-483 BC
Buddha



447-433 BC
Parthenon



AD 395-1589
Byzantine Empire

AD 1215
Magna Carta



AD 1350
Renaissance

AD 1914-1919
World War I



AD 2003
Iraq War

3.7 mil BC



3100 BC
Egyptian Civilization

551-478 BC
Confucius



264-146 BC
Punic Wars

C.7
Islam



AD 1096-1291
Crusades

AD 1789
French Revolution



AD 2001
9/11

AD 2009

The new chemical entities are newly introduced

A night-time photograph of an outdoor event, possibly a wedding or a formal dinner, with string lights and palm trees. The text is overlaid on the image.

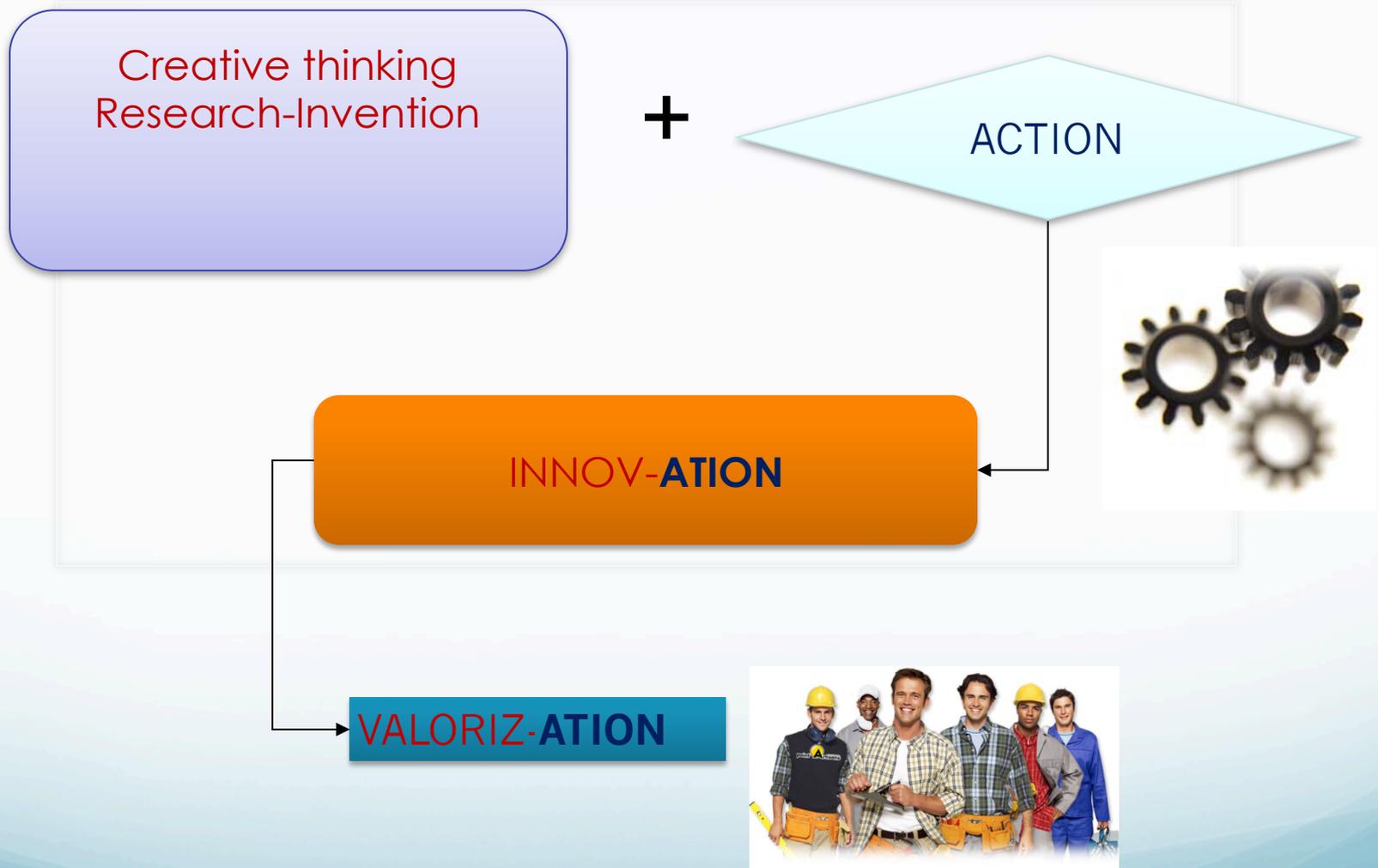
Call For Submissions:
TRADITION

Tradition is a value, something that should not be “kept under a glass” to save but something to be used and modeled as a source of inspiration and innovation in order to be preserved and transmitted to the next generation

SUSTAINABLE DEVELOPMENT

- Conservation of a form of local knowledge
- Promotion of local medical systems in primary care
- Conservation of biodiversity
- Development of products using selected raw materials, obtained from local crops, organic and non-intensive, the earning of which are reinvested to support local projects of environmental and social development

The Process



Examples

- Baobab superfruit from Senegal
- Essential oils from Amazonians
- Satureja Montana from Albania
- Polyphenols from meristematic cells culture
- Marine Cosmeceuticals “Takaroa Project”
- The Food Grade Approach to Cosmetics





UNIVERSITA' DEGLI STUDI DI FERRARA
FACOLTA' DI FARMACIA

Corso di Laurea in Scienze e tecnologie dei prodotti
erboristici, dietetici e cosmetici

DEVELOPMENT OF SUSTAINABLE PRODUCTS:
EVALUATION OF THE PROFILE OF ACTIVITY OF
ORGANIC ESSENTIAL OILS OF THE AMAZON FOREST

Relatore:

Dott.ssa Silvia Vertuani

Correlatore:

Dott.ssa Alessandra Guerrini

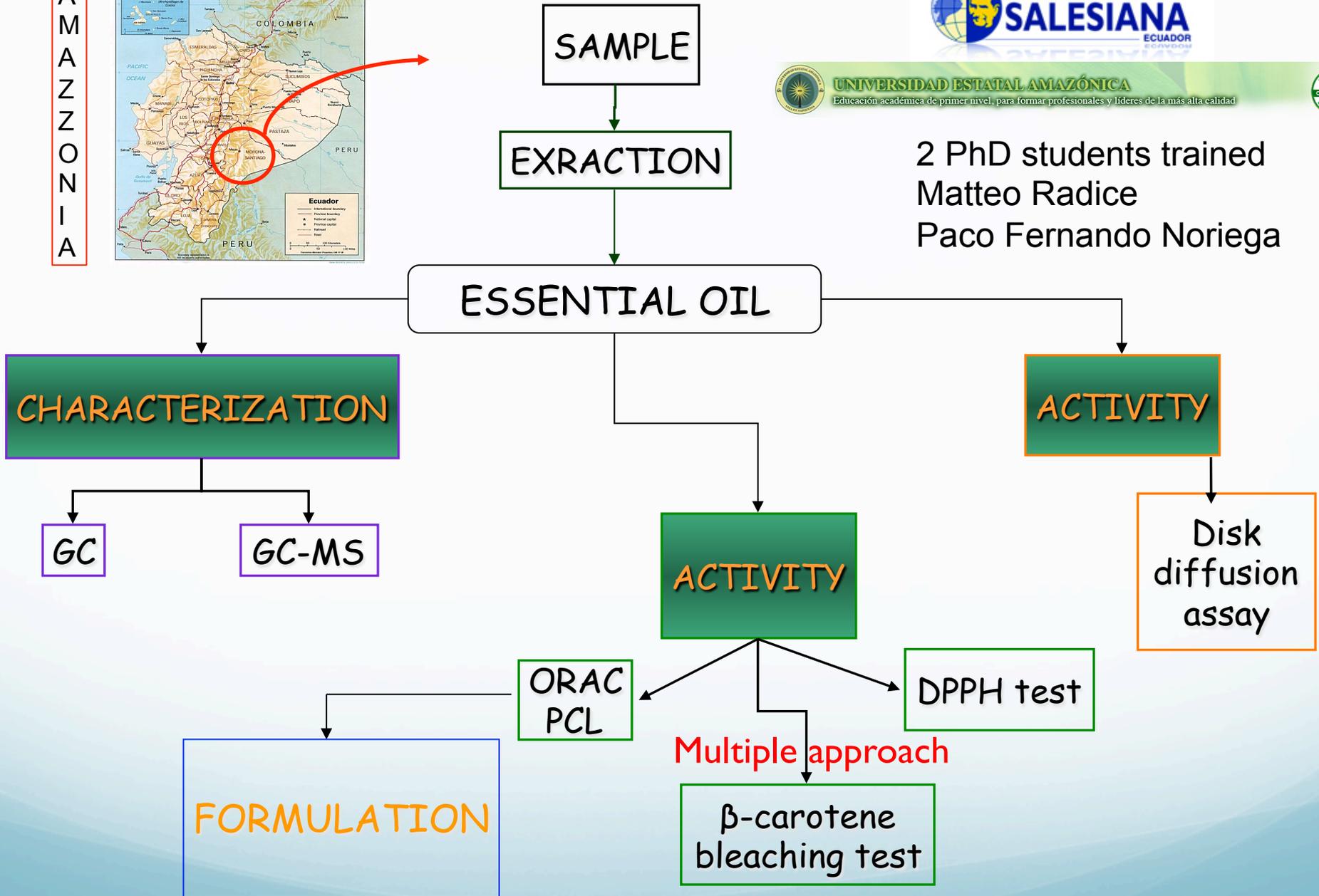
Laureanda:

Irene Giacomelli

Anno Accademico 2010 – 2011



2 PhD students trained
Matteo Radice
Paco Fernando Noriega



Identification, Quantification, Formulation and Evaluation of Biological Activities of Essential Oils from Albania



Tutor Prof. Dr. Stefano MANFREDINI
Co-tutor Silvia Vertuani PhD
PhD Candidate M.Sc. Entela HALOCI
Matricola nr. 09539 Ciclo XXV

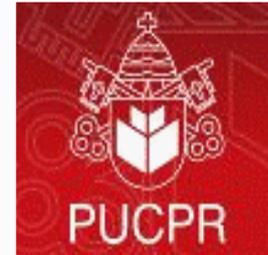


UNIVERSITETI
AUDENT

COMPLEMENTARY AND ALTERNATIVE
MEDICINE (CAM) FOR PAIN, HERBAL
ANTI-INFLAMMATORY DRUGS

PUC, Curitiba, Brasil

- **Understanding the value of cosmetic ingredients in the Brazilian tradition**
- **Analyze the trends that drive the market for cosmetics Amazonian**
- **Apply the ingredients studied in cosmetic formulations**
- **Contextualize**





PONTIFÍCIA UNIVERSIDADE CATÓLICA DO PARANÁ
ESCOLA DE SAÚDE E BIOCÊNCIAS
CURSO DE FARMÁCIA

AVALIAÇÃO DA ATIVIDADE ANTIOXIDANTE DO EXTRATO ALCOÓLICO OBTIDO A PARTIR DAS CASCAS DE PINHÃO DA *Araucaria angustifolia* EM FORMULAÇÕES COSMÉTICAS

GABRIELA SPRADA TAVARES DA MOTA
Orientadores: Prof^a Angela Bonjorno Arantes
Prof^o Stefano Manfredini

CURITIBA
Junho, 2012

Material vegetal

- Amostras de pinhão da *Araucaria angustifolia*;
- adquiridas em junho de 2009, em Curitiba/Paraná.



Adansonia Digitata L.



- Traditionally employed in several African regions as foodstuff and for medicinal purpose
- Its fruit is a natural source of essential nutrients (fiber, and antioxidant substances like provitamin A and vitamin C)
- Investigation of the Integral Antioxidant Capacity (IAC[®]) of products derived from Baobab

A tribute to Mauro Ottaviani



*Carrots or Baobab
This is the question*

The Beginning of the Project



Valorize by scientific efforts

Involve women in the villages and support to micro female credit

Enhancement of quality of a local product

Innovation in the livestock field

Involvement of national and international bodies

PROJECT BAOBAB

The project was carried out in the regions of Thies, Saint-Louis and Louga, in the western part of the country.



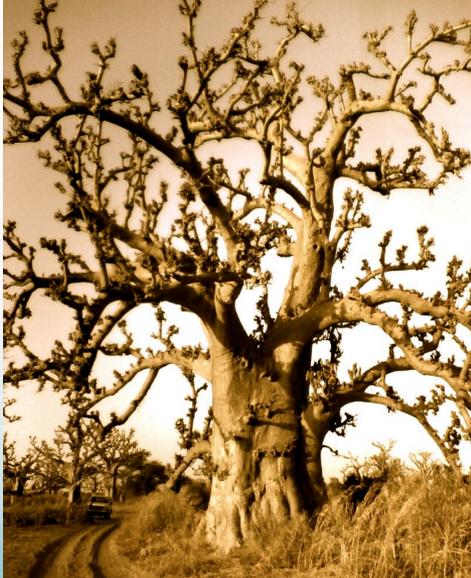
The villages involved were chosen based on:
increased presence of baobab forests in the immediate vicinity;

shorter distance from the city of Thies, where it was established the Baobab Fruit Company Senegal (BFCS), the local counterpart involved in the project.

BAOBAB:

Economic and cultural importance

The Baobab is for local people a renewable source economically very valuable, but its importance is mainly linked to the use of all parts of the plant from the point of view of therapeutic and nutritional.



Symbol of Africa, provides nourishment to men, remedy and cure for various diseases (present in Senegalese Pharmacopoeia) and shelter for families, but is also a strong element of sacredness.

A healthy goat



IL BAOBAB:

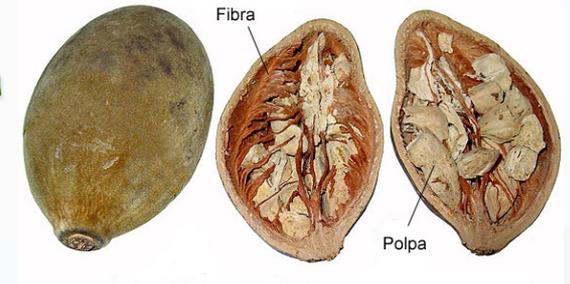
Nutritional, Medicinal and Cosmetic Properties



The fruit is rich in ascorbic acid (Vitamin C, an excellent antioxidant)



Pulp: rich in soluble and insoluble fiber (vs constipation and overweight) and antioxidants



Leaves: have high content of vitamin A and C



Seeds: palmitic, oleic and linoleic acids (great for cooking)

Antioxidant capacity of *Adansonia digitata* fruit pulp and leaves

2002

Silvia Vertuani, Elena Braccioli, Valentina Buzzoni and Stefano Manfredini^(*)

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Key words: *Adansonia digitata*, antioxidant capacity, ascorbic acid

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In the recent years, in the attempt to counteract the detrimental effects of oxidative damages is always more convincing the strategy of implementing the diet with antioxidants nutrients, especially deriving from natural sources. Ethnobotanical studies have confirmed the high content of antioxidant vitamins in *Adansonia digitata* fruit constituents and leaves. Baobab fruit pulp can be considered a much valuable source containing levels of vitamin C ranging 2,8-3 g/kg. In view of these considerations, by means of photochemiluminescence method (PCL), the Integral Antioxidant Capacity (IAC) of aqueous/methanol extracts from *Adansonia digitata* fruit pulp and leaves, was assessed in comparison to those deriving from other natural sources of antioxidants, with particular consideration to the contribution from the ascorbic acid component (i.e. orange, kiwi, apple and strawberry). The results were calculated in terms of g fresh weight (FW), uncooked portion size, using Trolox as standard compound. When compared together IAC values for the examined product resulted as follows: *Adansonia digitata* fruit pulp ≥ 90% OPC rich extract > *Adansonia digitata* dry leaves >> *Adansonia digitata* leaves glycolic extract >>> strawberry fresh fruit pulp > kiwi fresh fruit pulp > orange fresh fruit pulp > apple fresh fruit pulp and peel. Results clearly indicate the interesting antioxidant properties of the fruit, in particular the IAC value of baobab fruit pulp was 10 time more high than that of orange pulp, with value of 11.1 mmol/g (FW) and 0.3 mmol/g (FW) respectively.

Where BFCS is now



THE WEBSITE IS UPDATING. PLEASE ASK TECHNICAL INFORMATION to orders@baobabfruitco.com

We are the Baobab

Quality

From the closed Baobab Fruit to an open quality
To the purest, safest, best products

Baobab Fruit Company Senegal is worldwide leader in the transformation and commercialization of Baobab Fruit into a range of semi-processed materials for the use in food, nutraceutical and cosmetic market since 1999.

BFCS Senegal is responsible for the harvesting and processing, BFCS Italy is responsible for the warehousing, marketing and distribution of Baobab Fruit and its products to Europe, the U.S. and other 20 countries all over the world.

Our focus is on: quality, safety, traceability and real social responsibility.

BFCS grants the top quality of Baobab Pulp Powder and Baobab by-products and the total traceability as BFCS has full production process and control in West Africa, from harvesting to finished bulk products. To the best of our knowledge no other company currently does the same.

Moreover, as leading Baobab Fruit processor, BFCS grants to provide stock all year round and a fair price policy.

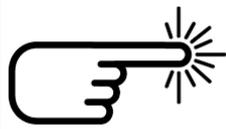
In our new processing plant in Senegal, Social Responsibility Certified by IMO, we employ more than 200 local people. We work to HACCP, GMP and GHP standards and process over 1000 tons of baobab fruits, sourcing from about 3000 small scale rural producers in Senegal.

Safety

Africa is where we work and Europe
is how we work. Safety is in good hands



www.baobabfruitco.com



www.baobab.com

We are the Baobab

Traceability

Follow our traces, from the Baobab Tree to the final product. Find our real organic soul



orders@baobabfruitco.com

Our main products:

FOOD

- Powders - Organic, COR/NOP and Kosher certified
- Baobab Fruit Pulp Powder
 - Baobab Fruit Pulp Powder - Dry Extract
 - Baobab Fruit Pulp - Soluble Fiber Extract
 - Baobab Leaves Tisane Cut

NUTRACEUTICAL

- Powders - Organic, COR/NOP and Kosher certified
- Baobab Fruit Pulp Powder
 - Baobab Funicles Powder
 - Baobab Seed Endocarp

COSMETICS

- Powders - Organic, COR/NOP
- Baobab Fruit Pulp Powder
 - Baobab Leaves Powder
 - Baobab Funicles Powder
 - Baobab Seed Epicarp Powder 40 and 500

COSMETICS

- Liquid Extracts, Parabens Free
- Glycolic Baobab Leaves Extract
 - Glyceric Baobab Leaves Extract
 - Glycolic Baobab Pulp Extract

OILS

- Organic, COR/NOP
- Baobab Oil Cold Pressed
 - Baobab Oxy Oil

ANIMAL FEED

- Powders - Organic, COR/NOP
- Baobab Fruit Pulp Powder NR
 - Baobab Seed Cake



Social Responsibility

We respect the land, people and their lives. Because local is social



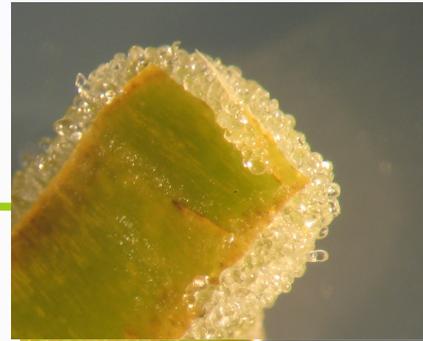
PLANT STEM CELLS



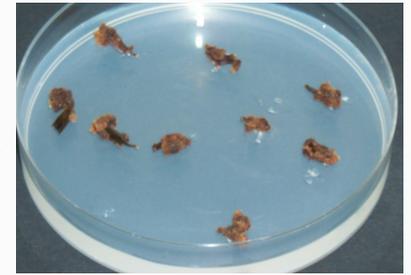
Plant tissue



Sampling of
sterilized tissues



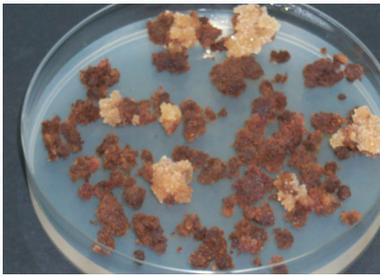
Callus induction in
solid culture



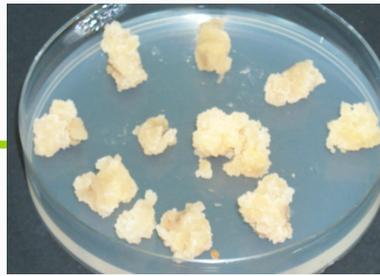
Callogenesis

It may be a leaf, a flower or a seed.
Only a small amount of plant tissue is required to
produce specific active substances

This small amount, however, requires in-depth scientific and technological knowledge



Callogenesis increases



New cell line



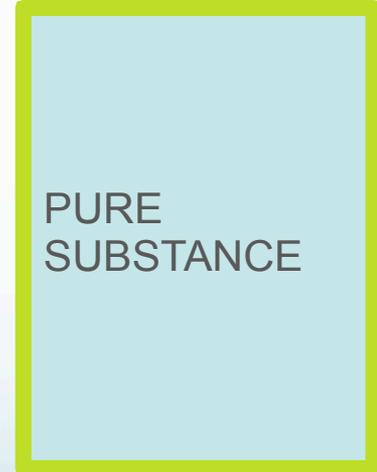
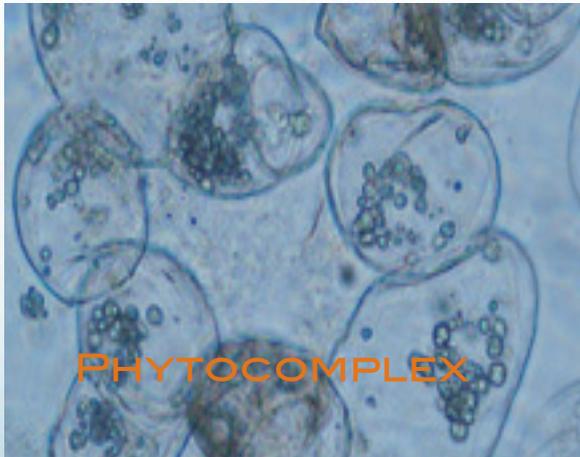
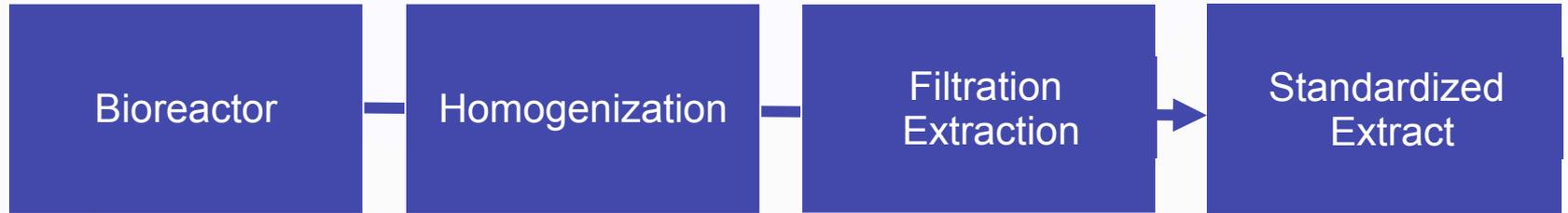
Selection



Scaling Up

CONTINUOUS IMPROVEMENT

The process generates 3 different categories of products
Phytocomplex, HTN Actives up till Pure Substances



IRB, Vicenza, Italy, High titre standardized dry extract

11/07



Saving water



=



- One customer using 6 units per year of 50 ml cream with a biotechnology active ingredient can save 1 ton of water

P.I. D&D, Venice, Italy

The Takaroa project



Ver.1 2014

partner



The D&D facility in Takaroa



1st Activity pearl production

Production in a sea of lanterns oysters
Ready for the inoculation of the core
Approximately 1 year after the entry into sea
(15-16 months)

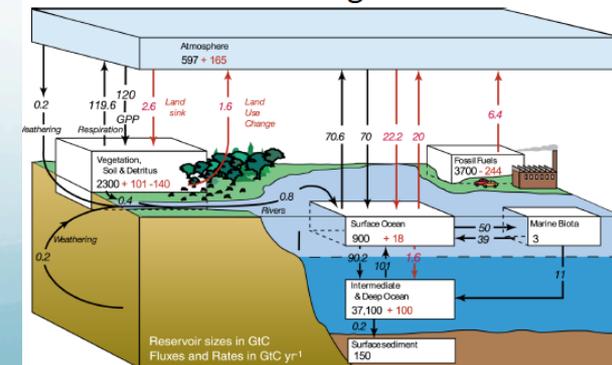


2nd activity: Carbon Capture and Storage

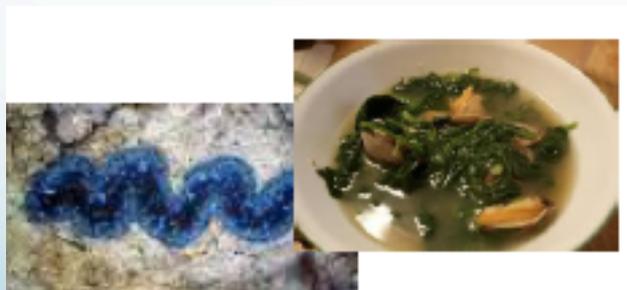
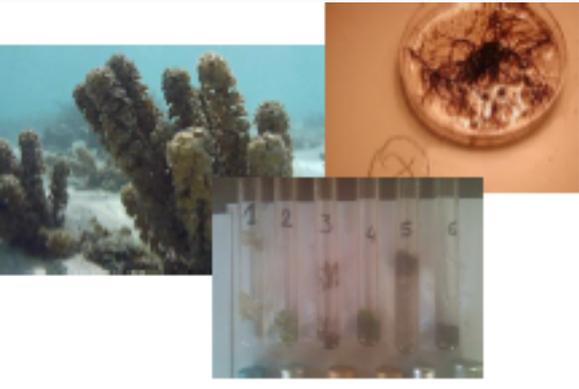
1. Calculating value of the absorption of CO₂ in the shells of oysters
2. Shells as disposal from manufacturing operations pearls
3. Landfill of shells and preparation of the report for generation of carbon credits
4. Sells of carbon credits



2° attività : Carbon Capture and Storage



3rd activity: production of extracts for cosmetic and pharmaceutical use



And much more

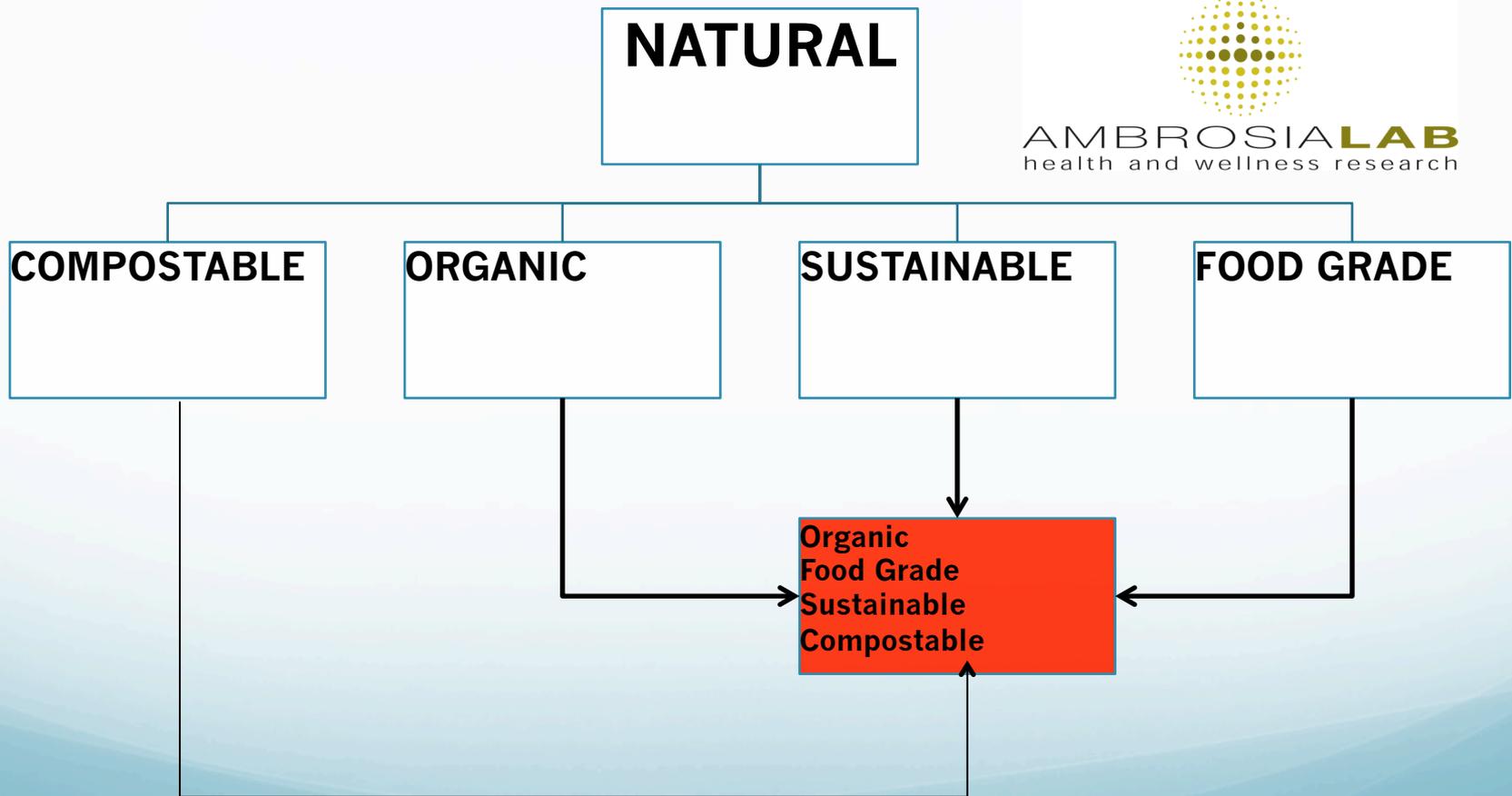
4th activities: fish pathology support
local producers of pearls

5th activity: gas or biofuel from
microalgae

6th activity: agriculture bamboo

INNOVATION THROUGH NATURE

Winner of the 1st prize on innovation at Making Cosmetics 2015



Food Grade Project



Minimalist Formulations

99,5-100% food grade

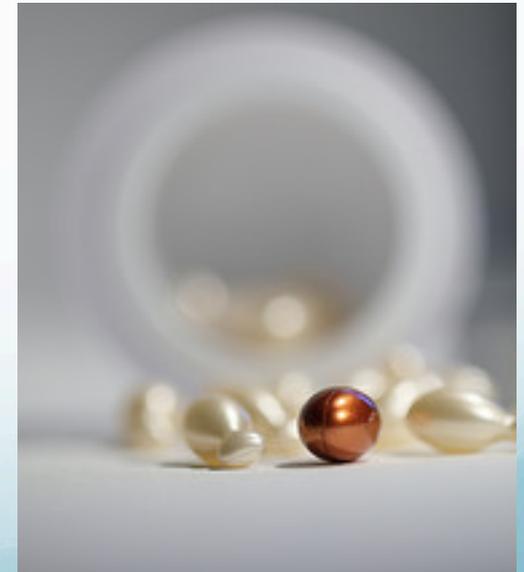
- The ingredients are also used as food, less number of exclusively produced raw materials, more safe and bio-compatible: a lesson from tradition (the XV century Michele Savonarola's recipes)

=

less health and environmental risks

- Licenced to Judith Williams GmbH Company in 2012

Compostable



The product marketed in Italy, England, Germany, Spain, Grece in 2015.



SPREADING the minimalist approach

Sust

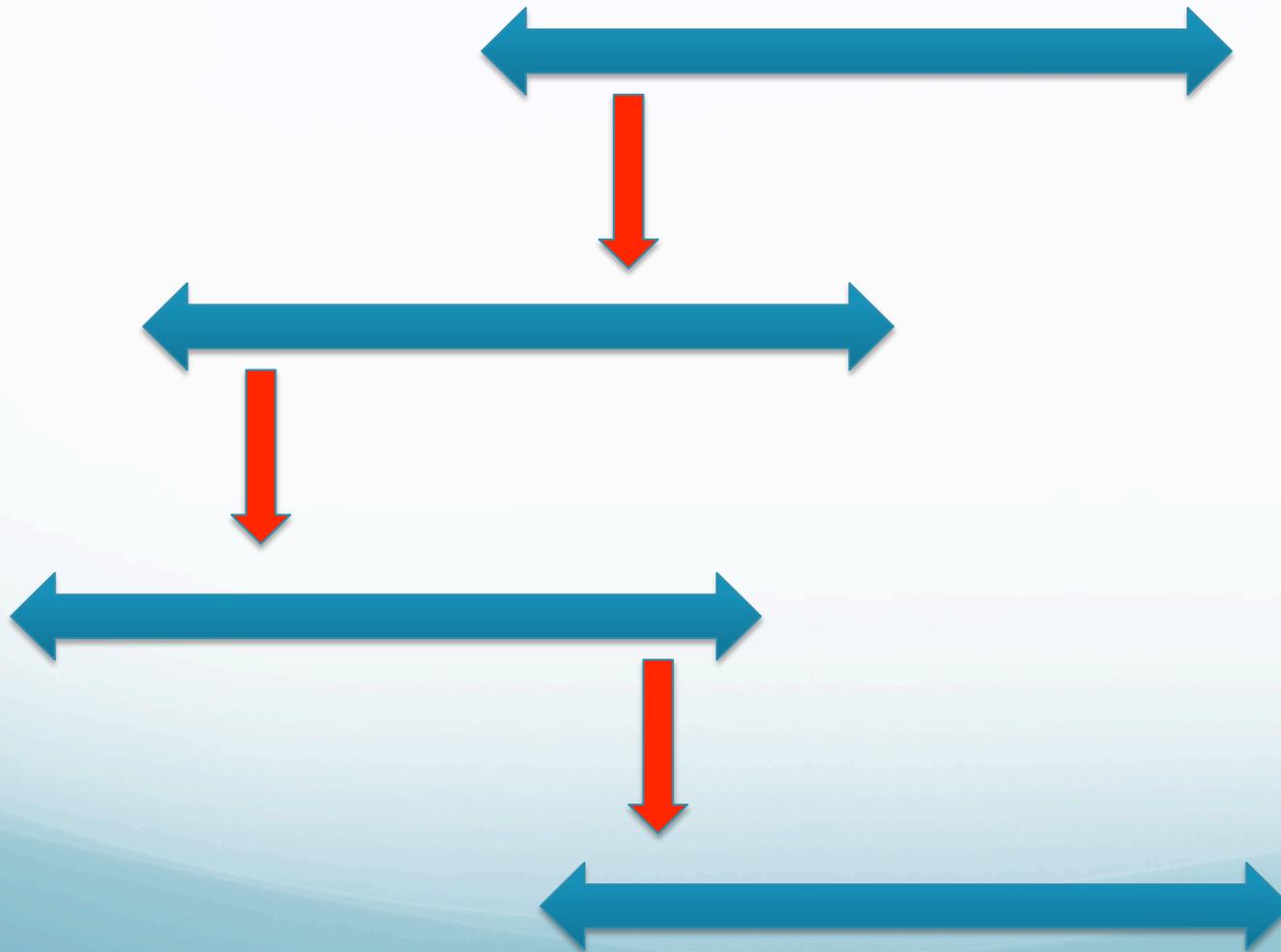
Aa Bb Cc



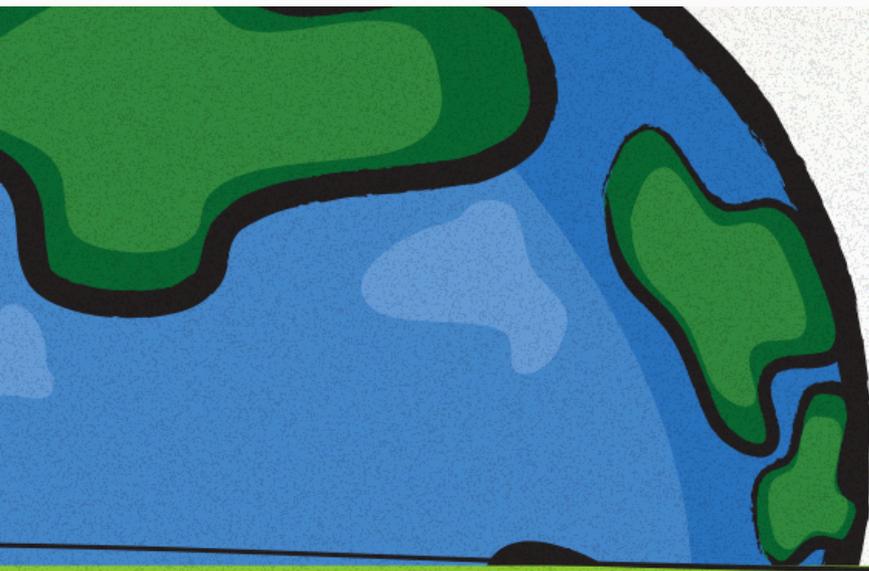
Switch Now to Bio-Natural and Sustainable Ingredients



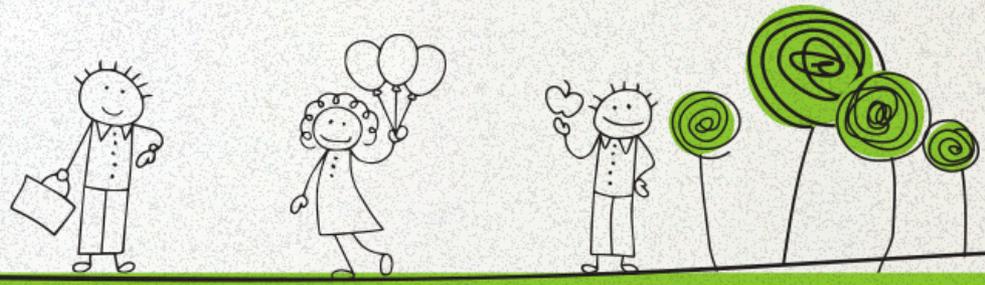
Lateral thinking



MADE LOCALLY



ACT GLOBAL,
THINK LOCAL



Creative Thinking is not a Linear Process



We Can Do It!



J. Flax

POST FEB. 15 TO FEB. 28



WAR PRODUCTION CO-ORDINATING COMMITTEE