FruitPeel™

Glycerin based extract from Tropical Fruits standardized in carbohydrates and total alpha hidroxyacids (AHAs)

INCI name Suggested: Water (and) Glycerin (and) Spondias Mombim Pulp Extract (and) Mangifera Indica (Mango) Pulp Extract (and) Musa Sapientum (Banana) Pulp Extract

From where the idea came out?

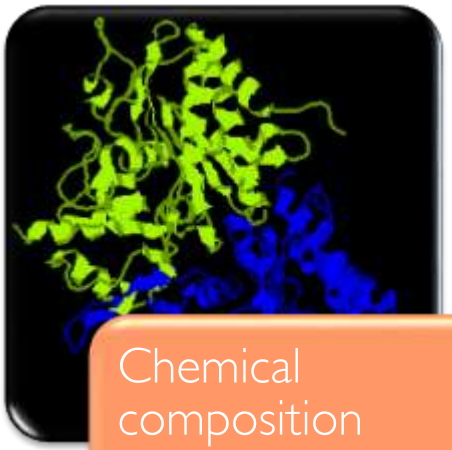
FruitPeel™

Cell turnover and new antiageing

- Mild cell turnover stimulation
- Face and skin adipocytes filling

Tropical fruits

- Banana
- Caja
- Mango



Chemical composition

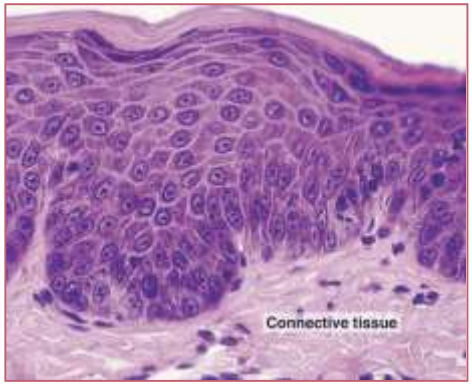
- AHAs from fruits
  - Citric, malic, glicolic
- Sugars, carbohydrates, minerals

Marketing Claims

- Mild cell turnover
- AHAs naturally found in tropical fruits
- Different mechanism of action from traditional AHAs
- Accelerates cell turnover without excessive discomfort
- Keratolitic effect, reinforcing the cutaneous barrier due young corneocytes cohesion
- Intelligent lipogenic effect, stimulating silent aged genes
- Enhance general features of cutaneous relief

Ageing: changes in cutaneous tissue

Epidermis



- Keratinocytes number decrease
- Turnover cell reduction
- Tapering
- Corneocytes size increase
- Intercellular lipids reduction
  - Ceramides, cholesterol, fatty acids
  - Susceptibility and transepidermal water loss increase (TEWL) → dehydration
- Melanocytes: number reduction; size and activity

Ageing: changes in cutaneous tissue

Dermis

- Fibroblast number and activity reduction
  - ⇓ collagen, elastin and glycosaminoglicans
- Collagen loses solubility
- Elastin (elastic tissue) → degradation and elasticity loss
- Photolytic enzymes activity increase and inhibitors activity reduction
  - Metaloproteinases Matrix (MMP's)
  - Metaloproteinases (TIMP's) tissue inhibitors
- Dermal-Epidermal Junction (DEJ) decrease

Ageing: changes in cutaneous tissue

Micro vein

- Changes in blood vessels and veins
  - oxygen offer and essential nutrients reduction to dermis and epidermis
  - whiteness increase and temperature decrease

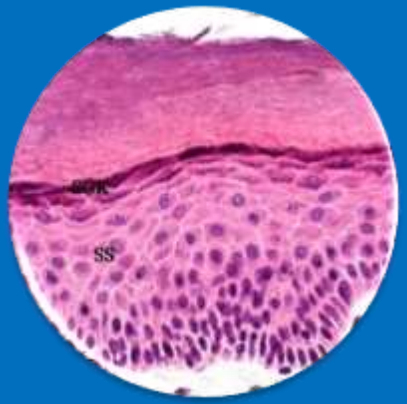
Sebaceous and sweat glands

- Hormonal stimulation decrease → ⇓ secrete activity
- Decrease in ecrin glands number and apocrin glands function

Ageing: changes in cutaneous tissue

Hypodermis (subcutaneous tissue)

- Adipocytes waste away
  - face, legs, hands and feet
  - contribution to wrinkles formation
- Proteins genic activity and adipocytes transcription factors reduction
  - ↓ SREBP-1
    - ↓ intercellular lipids buildup

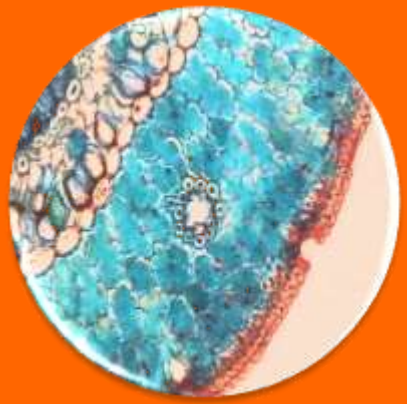


Epidermis

- Transglutaminase-1
- Claudin-1 (Tight Junction)

Dermis

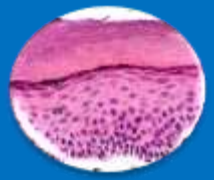
- Procollagen



Hypodermis

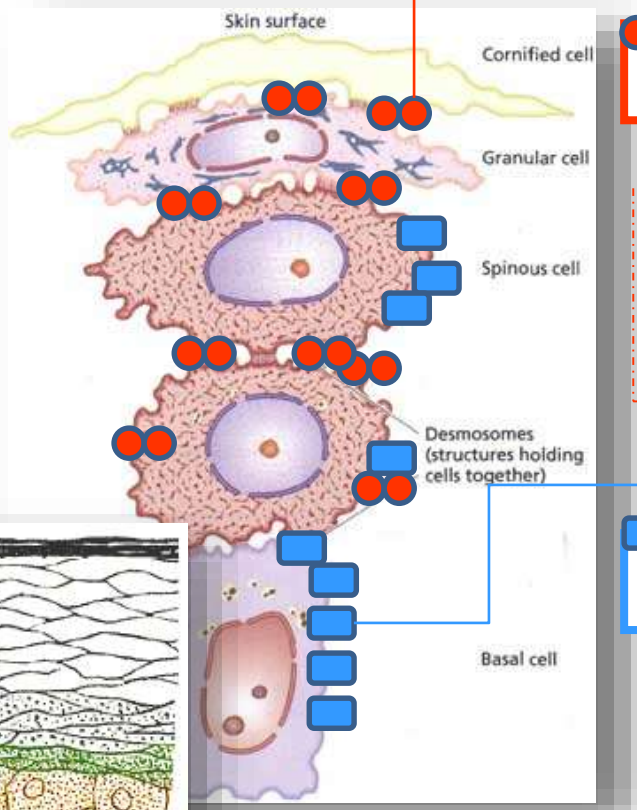
- SREBP-1
- Intracellular triglycerides

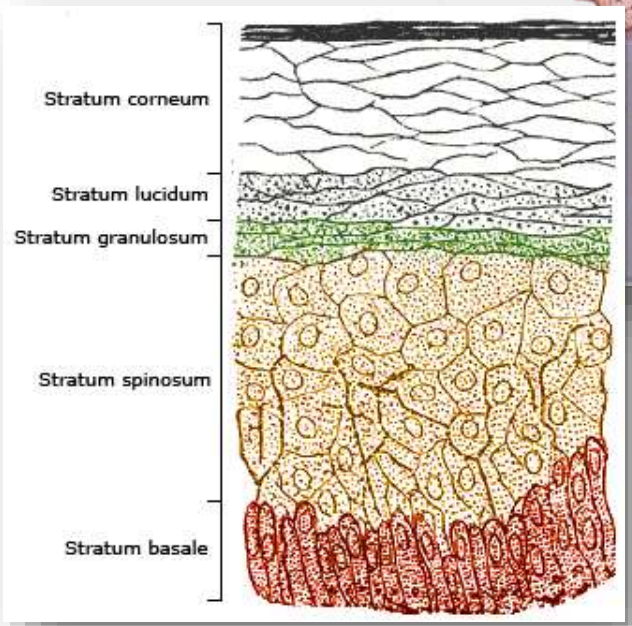
FruitPeel™ Mechanisms of Action definition



Epidermis

- TGase-1
- Claudin-1





Transglutaminase (TGases)

Calcium dependent enzyme that catalyzes covalent bond among proteins and peptides from SC

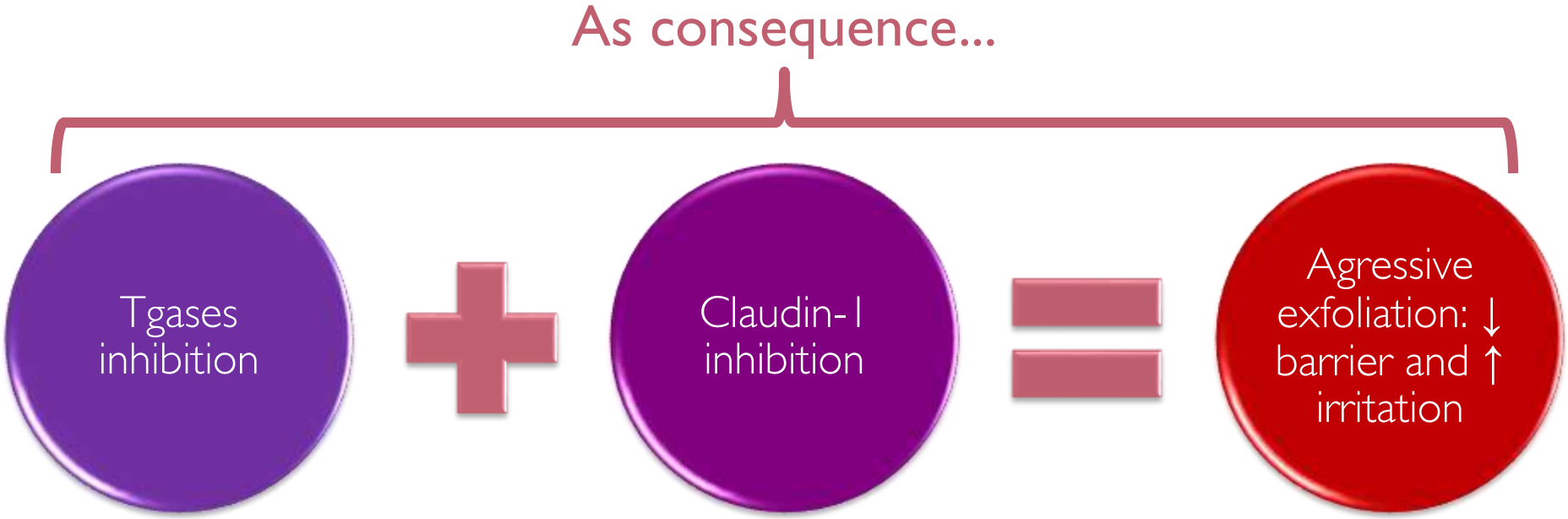
Claudin-1

Structural tight junction (TJ) protein essential to adherence keratinocytes. Indicates cell turnover index

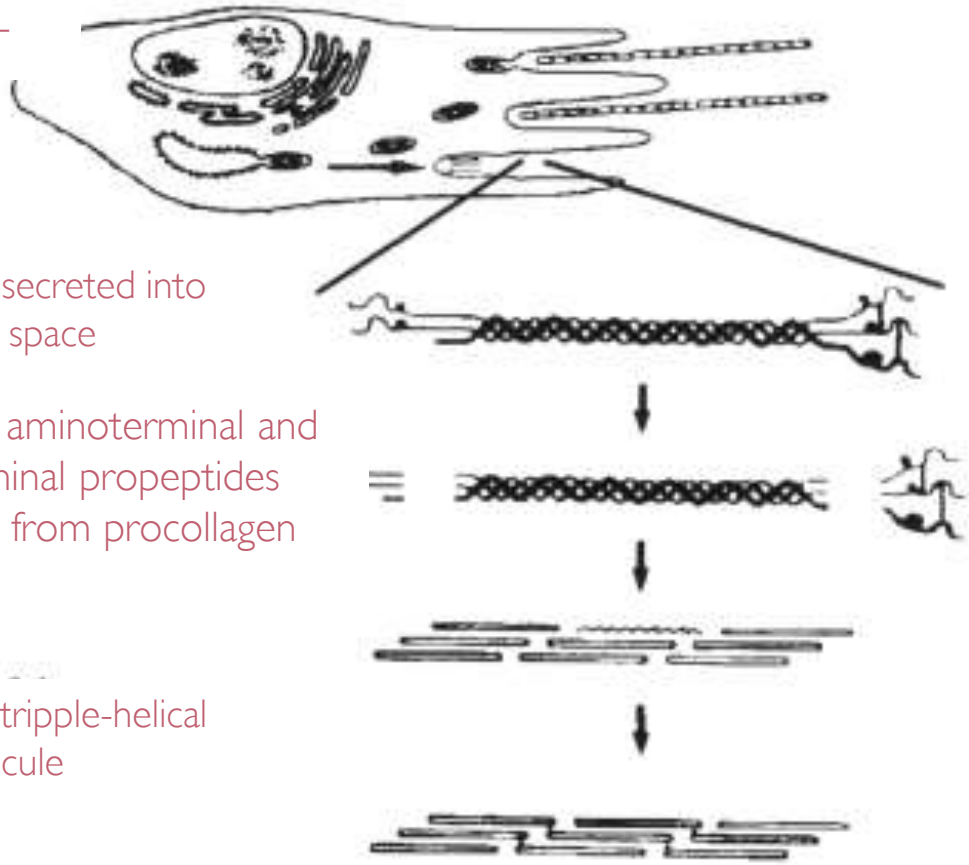
Traditional AHAs

Chemical aggression exfoliation (pH ≤ 3,8)

Chemical aggression = cell proliferation (turnover)



FIBROBLAST



Procollagen secreted into extracellular space

Cleavage of aminoterminal and carboxyterminal propeptides propeptides from procollagen molecule

Formation of tripple-helical collagen molecule

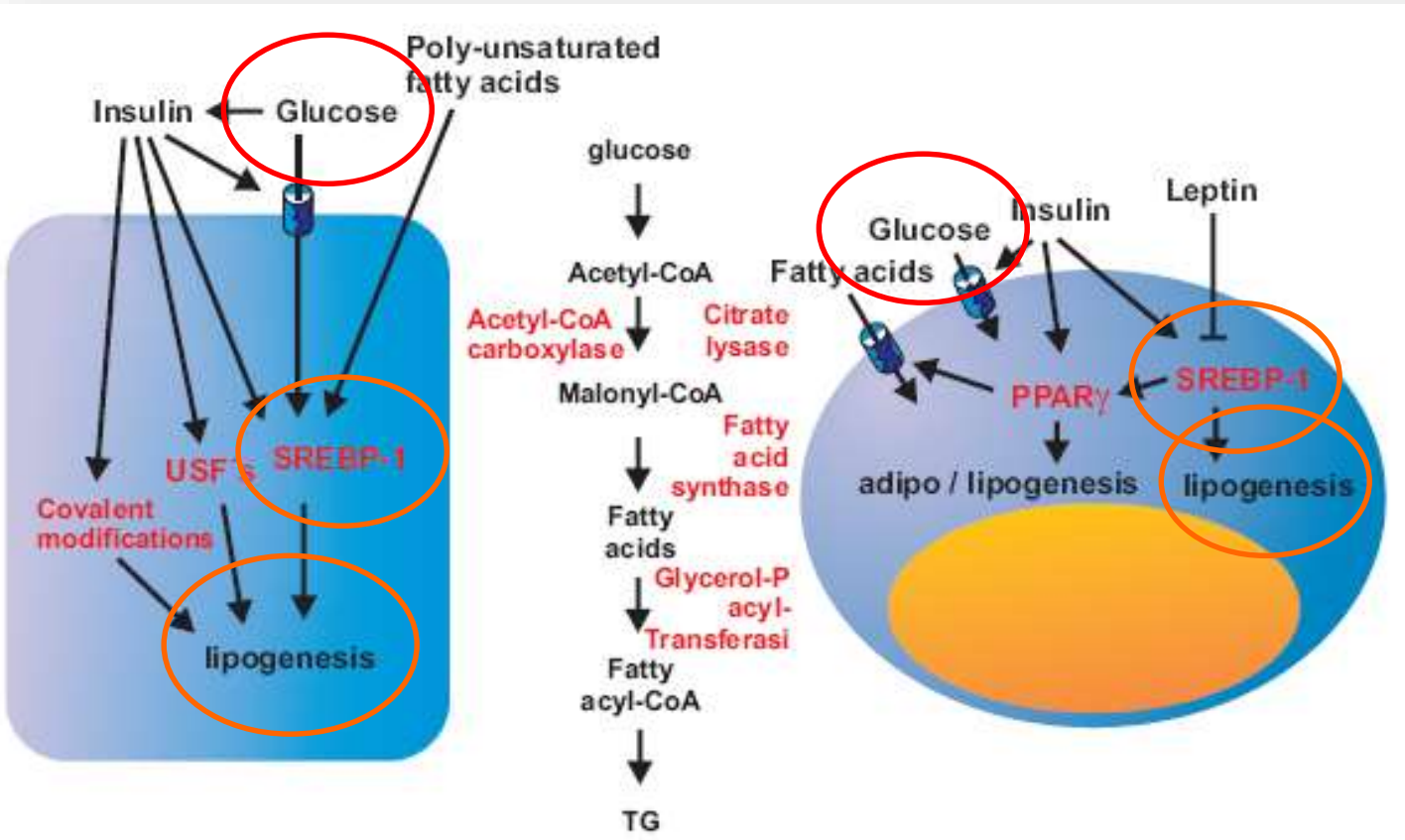
Dermis

- Procollagen

Procollagen = collagen again, functional collagen

Hypodermis

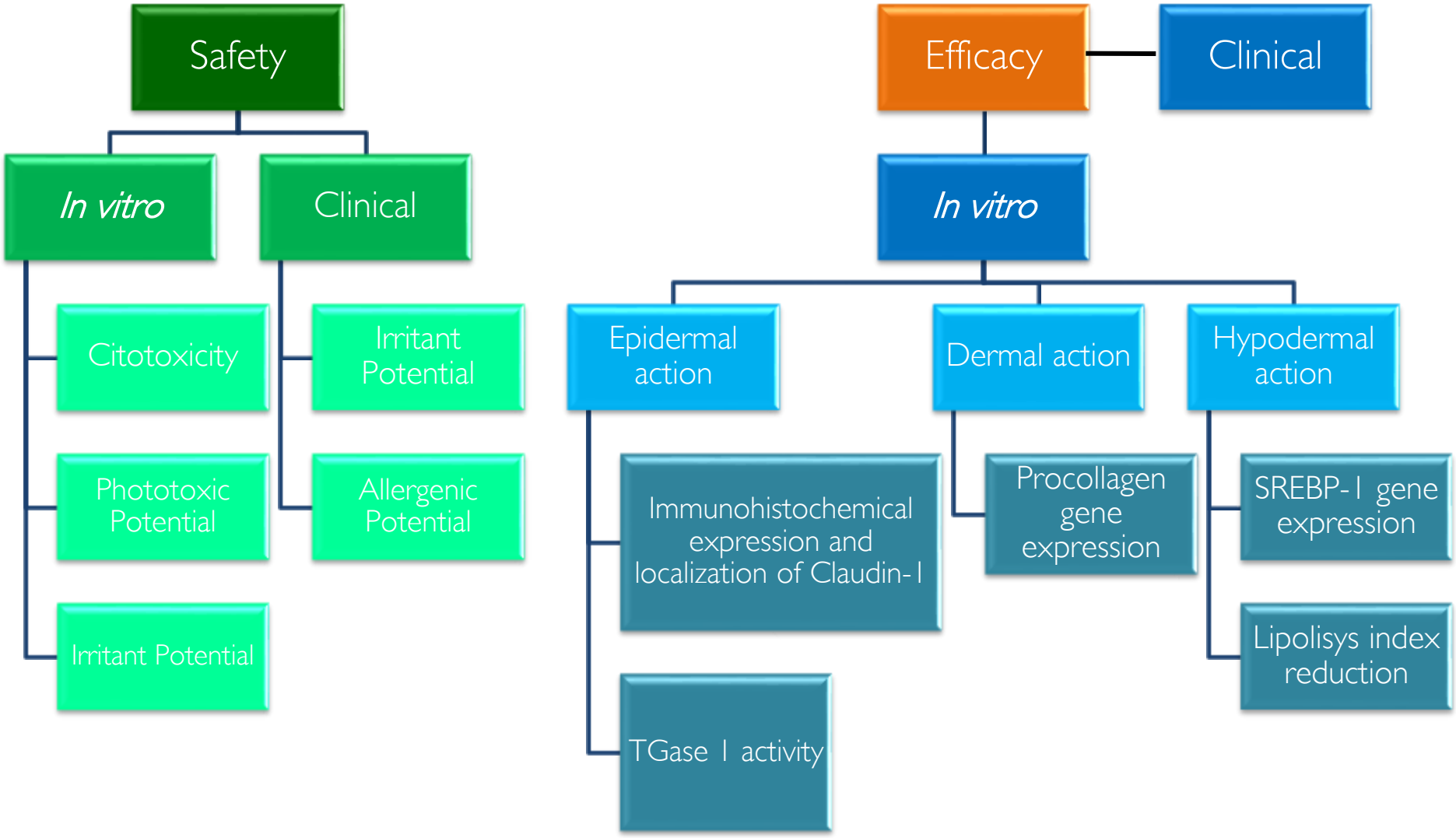
- SREBP-1
- Triglycerides



Summary:

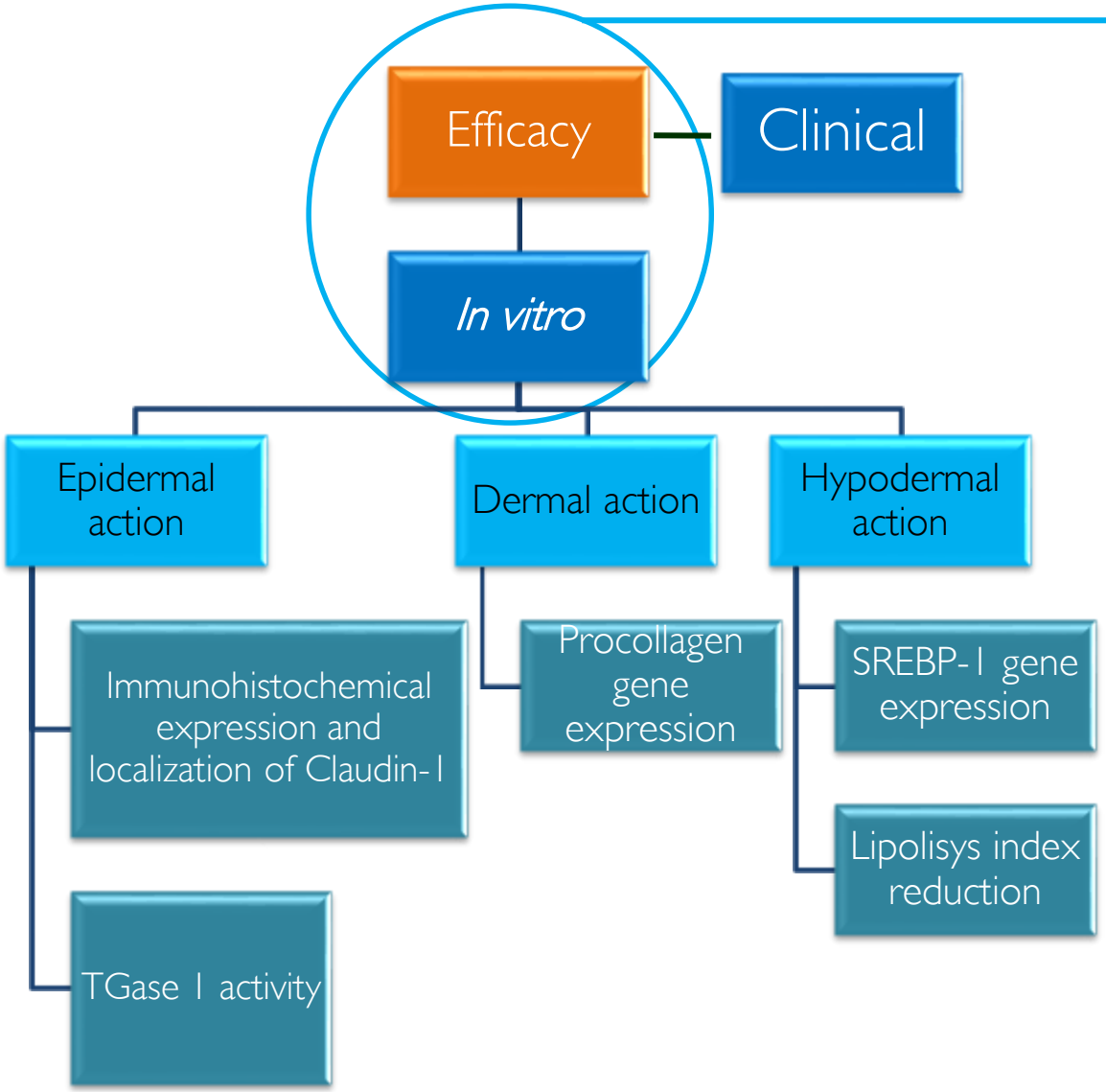
- Codifying gene silencing for SREBP-1 due to ageing
- ↓ SREBP-1 = ↓ Lipogenesis = ↓ intercellular TAGs = ↓ tissue filling

Safety and Efficacy Assessment
FruitPeel™


Safety
In vitro
Clinical
Citotoxicity
Phototoxic Potential
Irritant Potential
Irritant Potential
Allergenic Potential
Efficacy
Clinical
In vitro
Epidermal action
Dermal action
Hypodermal action
Immunohistochemical expression and localization of Claudin-1
TGase 1 activity
Procollagen gene expression
SREBP-1 gene expression
Lipolisys index reduction

Safety

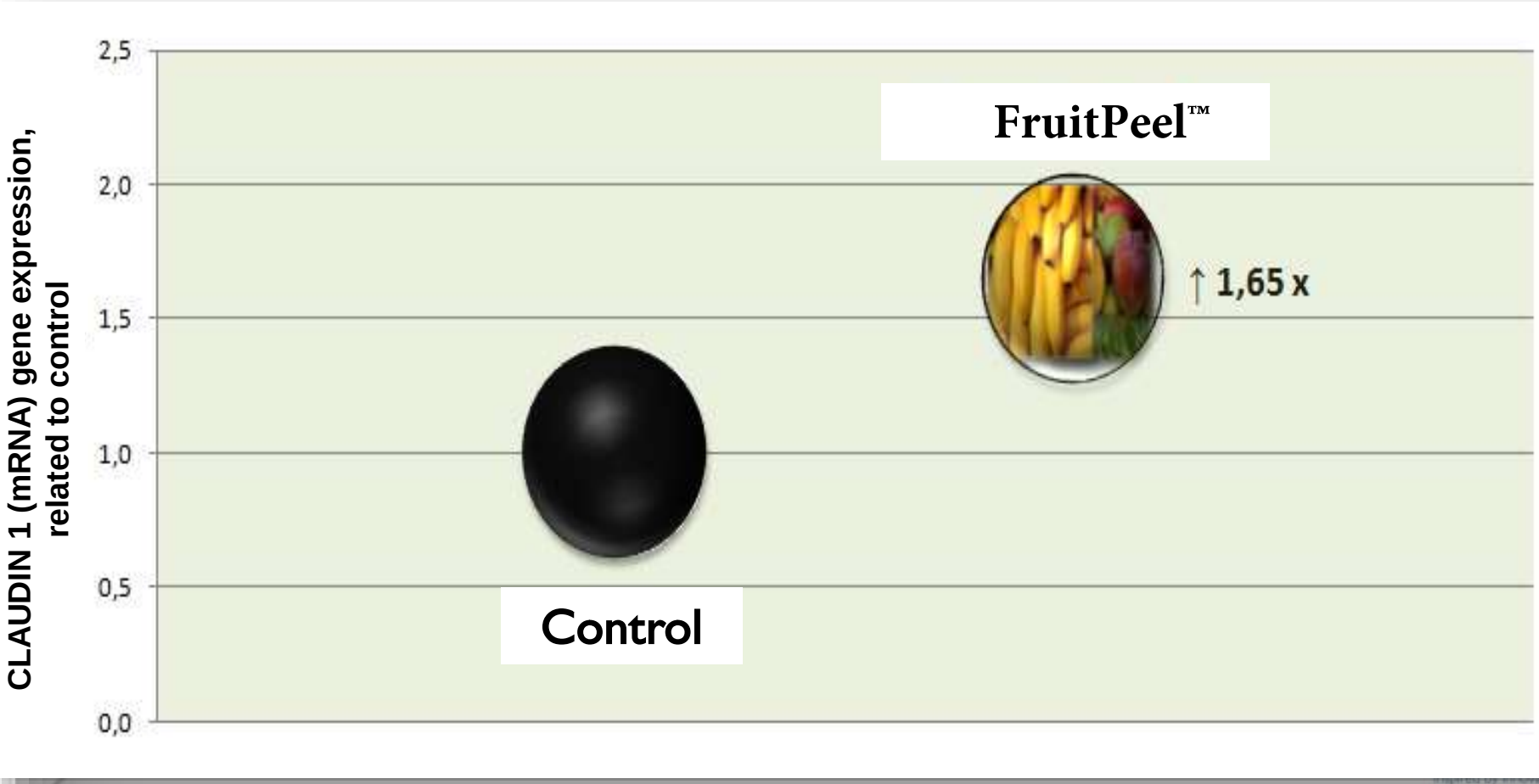
In vitro	
Cytotoxic Potential (XTT Test)	Citotoxicity not relevant
Phototoxicity (3T3-NRU)	Non-phototoxic
Irritant Potential (HET-CAM Test)	Weakly irritant
Clinical	
Primary skin irritation and cumulative (Open Test, PC5)	Good skin compatibility
Allergenic potential (HRIPT)	No allergenic potential



In vitro
Efficacy Results

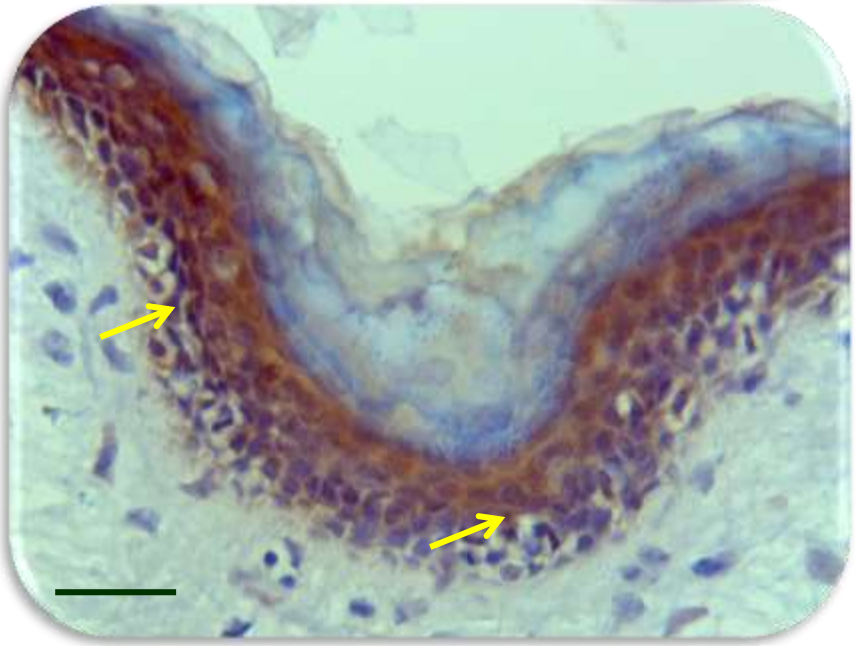
Epidermal Action

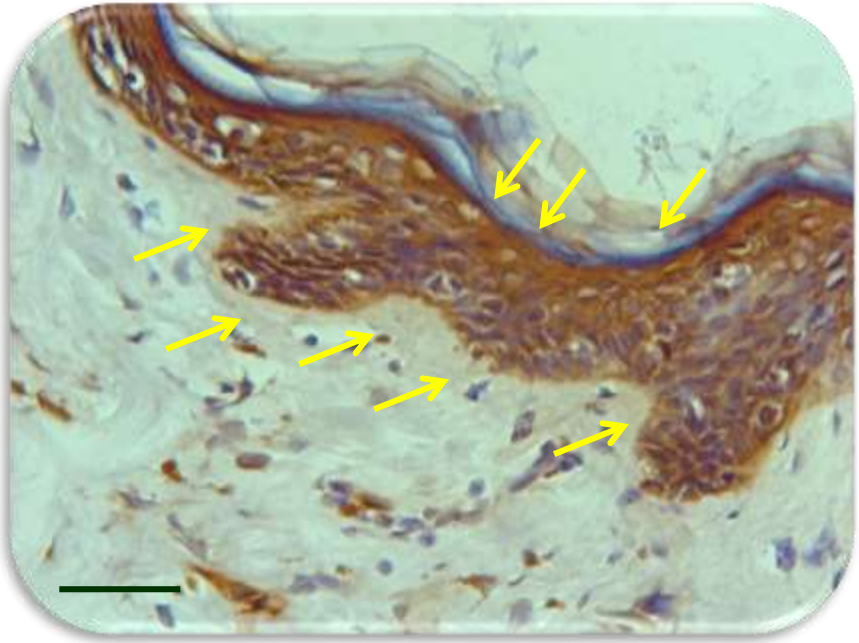
Claudin-1 Expression



Epidermal Action

Claudin-1
Immunohistochemical





Control (40x)

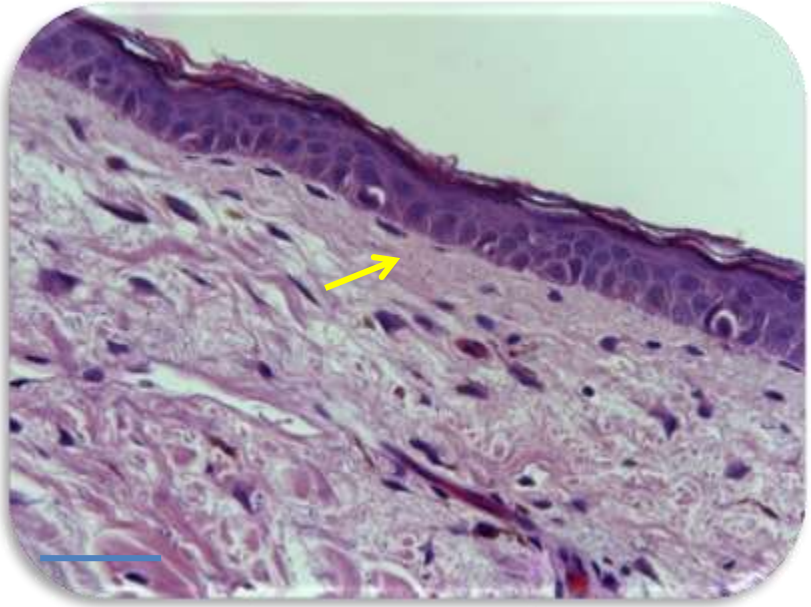
FruitPeel™ 0,04% (40x)

25µm

Intensity and distribution for brown area indicate Claudin-1 expression

Epidermal Action

Skin general condition (HE)



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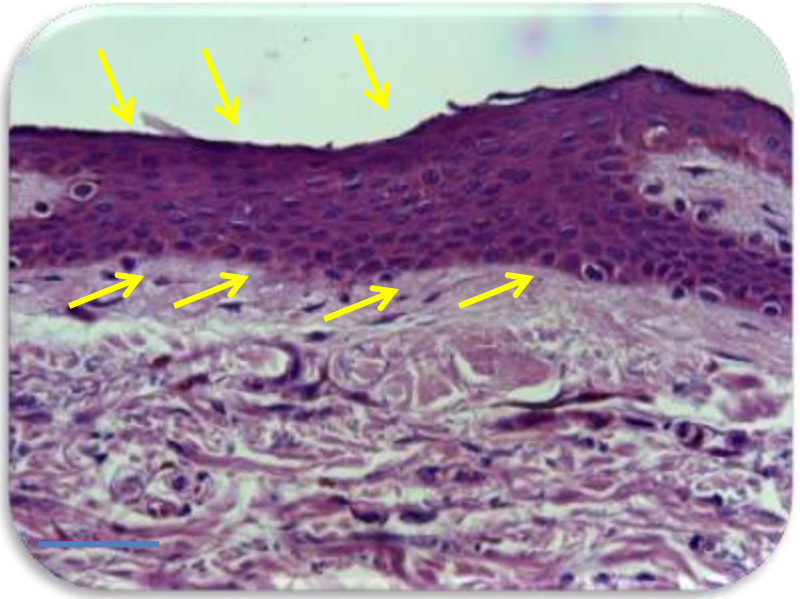


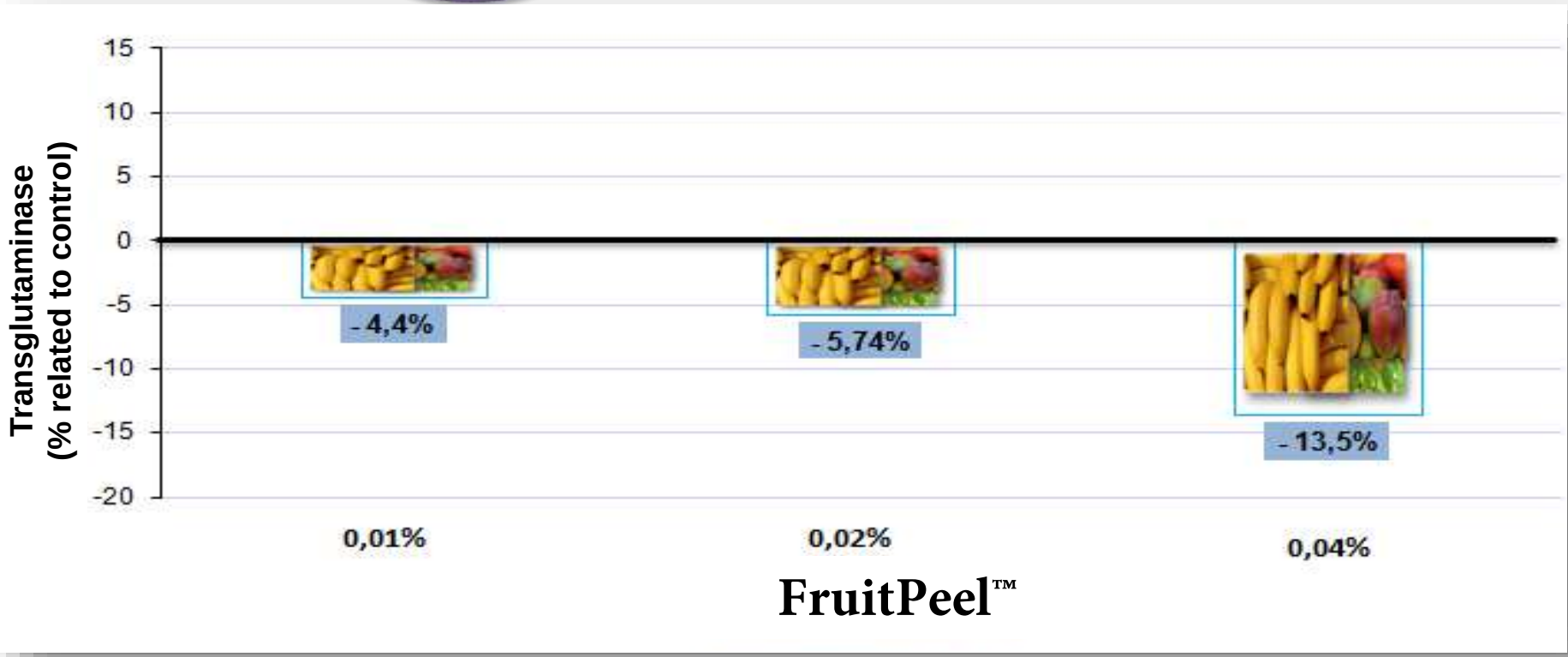
FruitPeel™ 0,04%

25µm

Epidermal Action

TGase 1

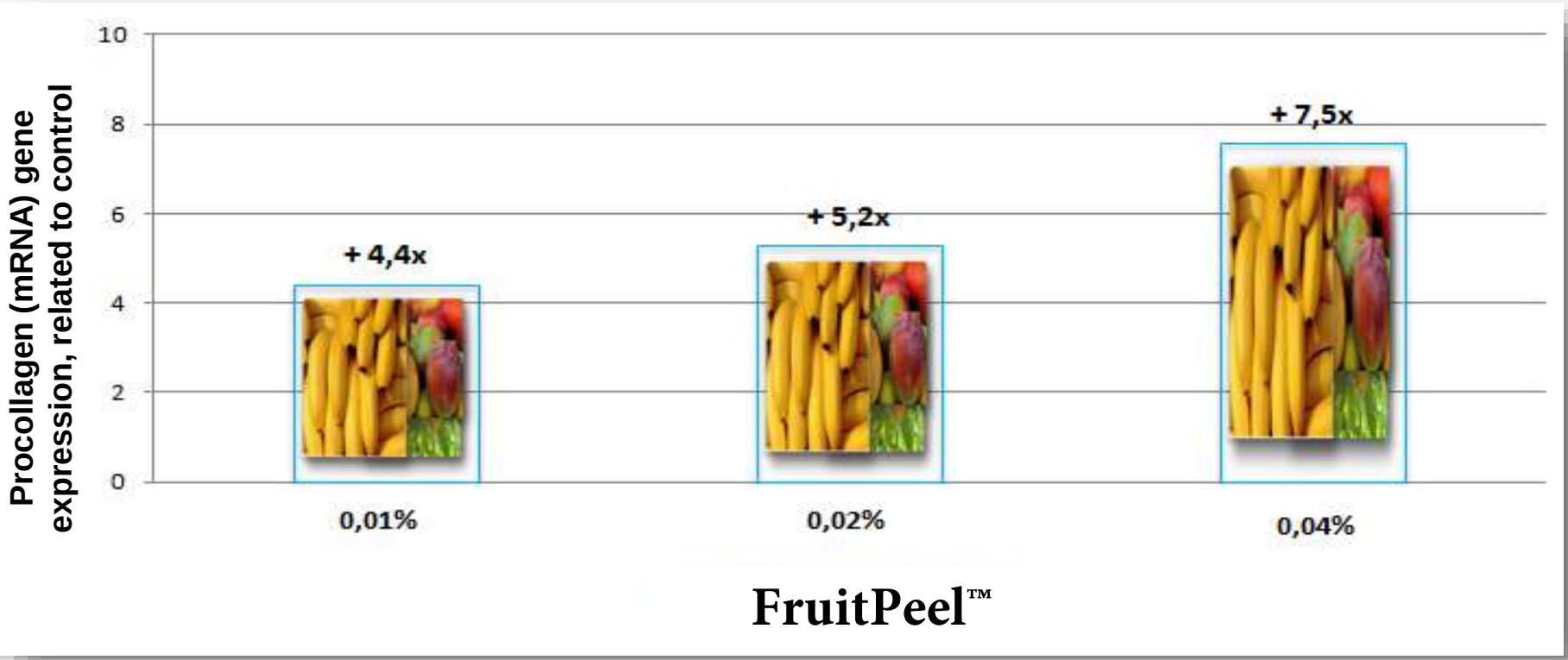
ELISA/colorimetry



Dermal Action

Procollagen expression

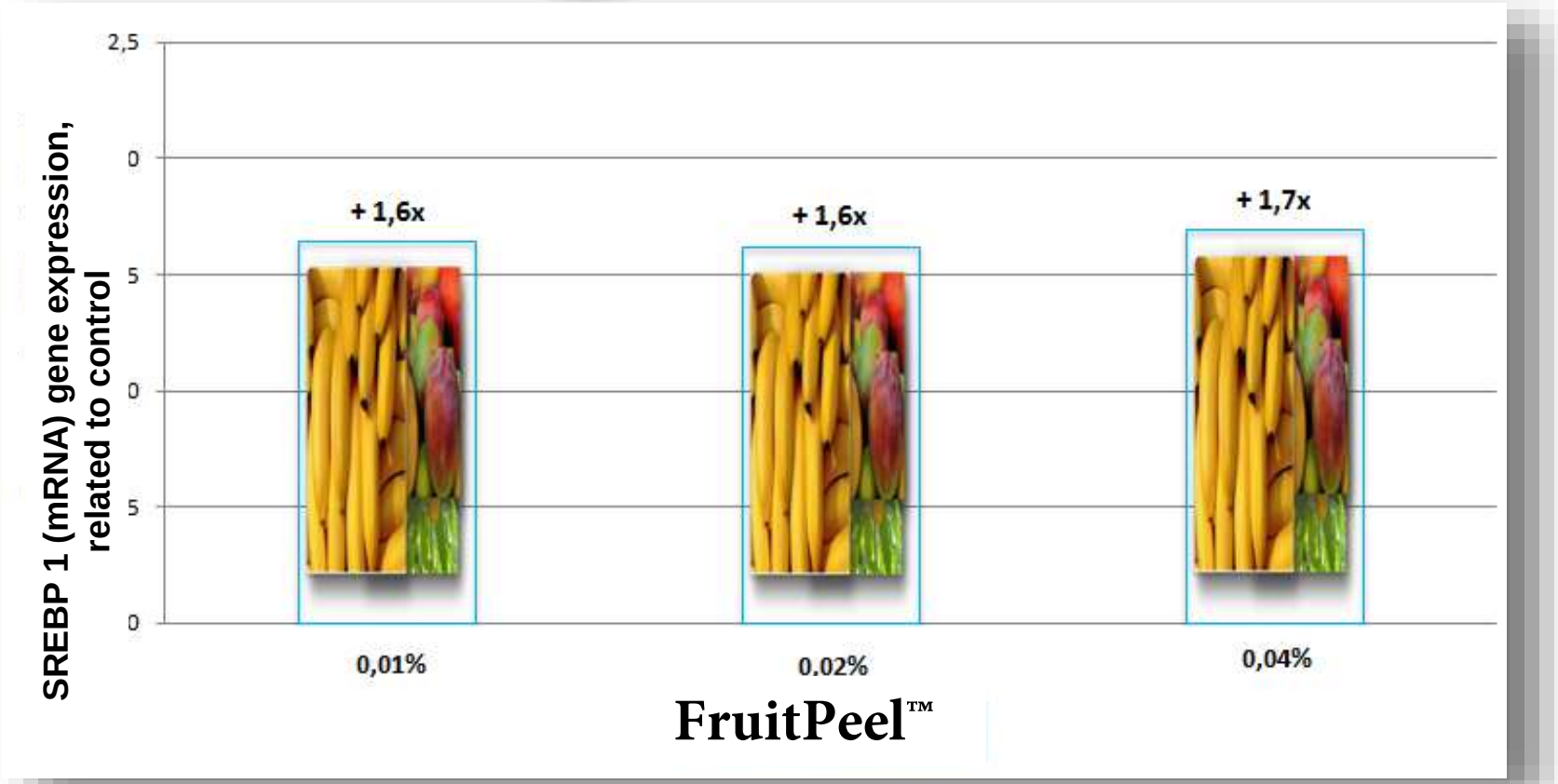
PCR-Real Time



Hypodermal Action

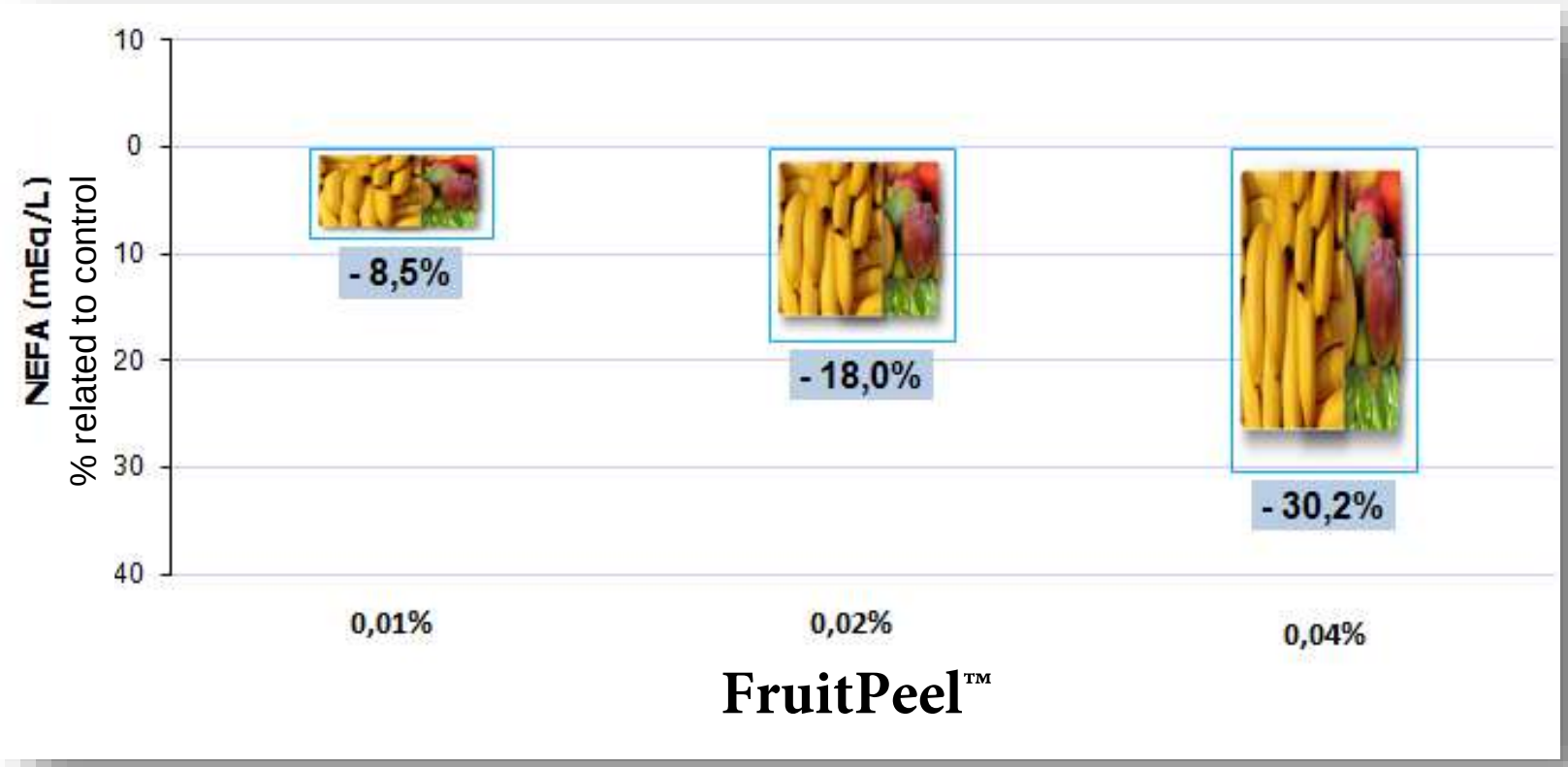
SREBP-1 expression

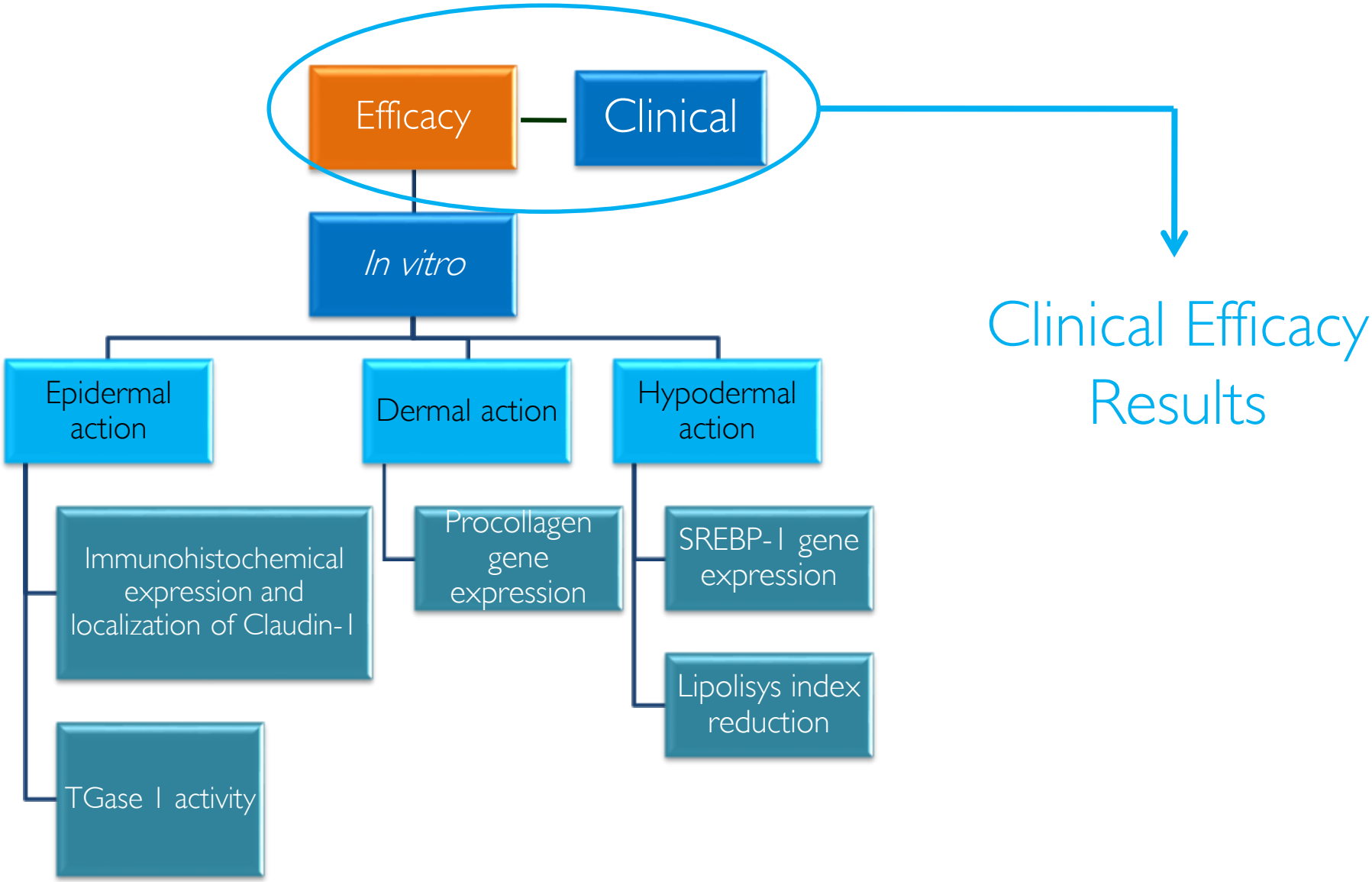
Aged adipocytes due to hormonal deficit



Hipodermal Action

Intracellular TAGs buildup




Efficacy
Clinical
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Clinical Efficacy Results

Clinical Assessment

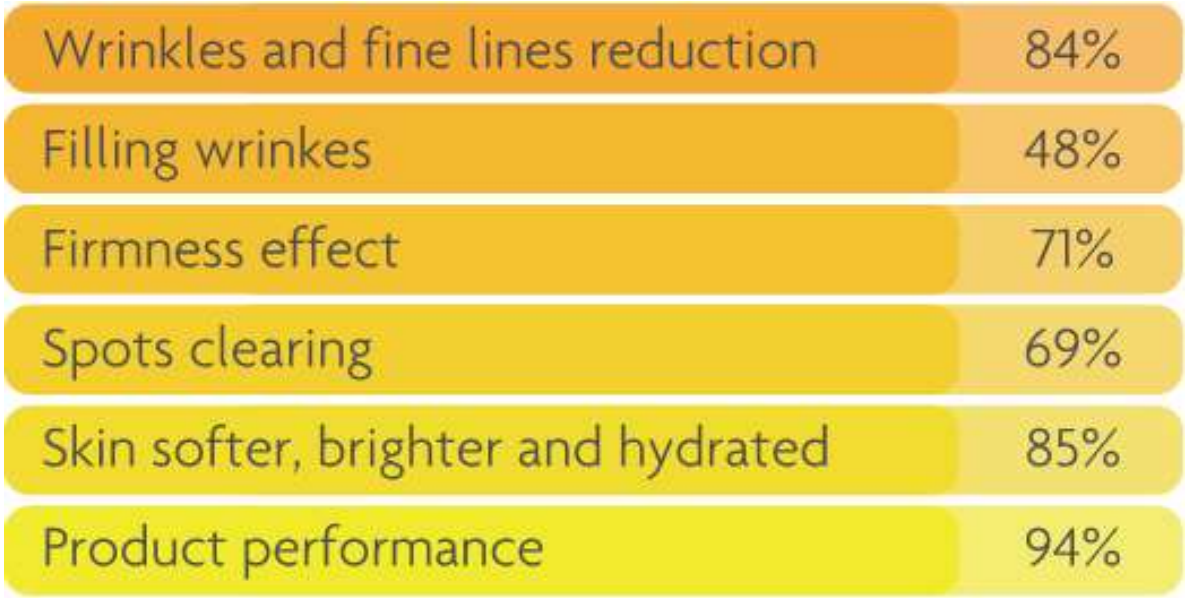
Subjective Efficacy –

Sensory evaluation and Cosmetic Appreciability

- 35 volunteers – aged between 35 and 55 years old
- 28 days treatment, under normal use conditions
- Placebo cream and cream with **FruitPeel™** 3%

Clinical Assessment

Subjective Efficacy



Why to use FruitPeel™?

- **FruitPeel™** is a non agressive cell turnover
- **FruitPeel™** contains natural AHAs from tropical fruits
- **FruitPeel™** accelerates epidermal cell turnover by promoting balance among main cell structures adherence

Why to use FruitPeel™?

- **FruitPeel™** promotes keratolytic effect, reinforcing the barriers due to more young corneocytes cohesion
- **FruitPeel™** has stimulator effects in wrinkles and tissues filling, due to its capacity to regulates gene activity related to adipogenesis
- **FruitPeel™** promotes triple benefits to the skin, acting on epidermis, dermis and hypodermis