

SUSTAINED AND CONTROLLED
DELIVERY SYSTEM

NANO LPD's Slimming

infinitec

activos S.L.

NANO LPD's Slimming

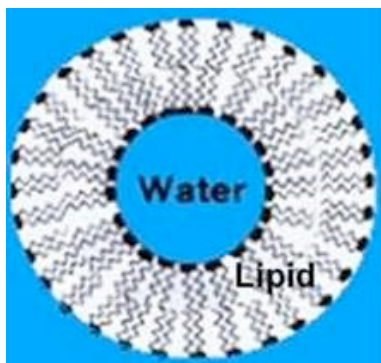
Nano LPD's

➤ They are extremely small vesicles (lower than 300nm)

➤ Mainly made of phospholipids

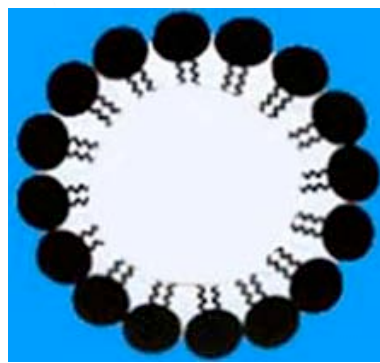
➤ The phospholipids are organised in bilayers

Nano LPD's



Phospholipids in bilayer

Micela



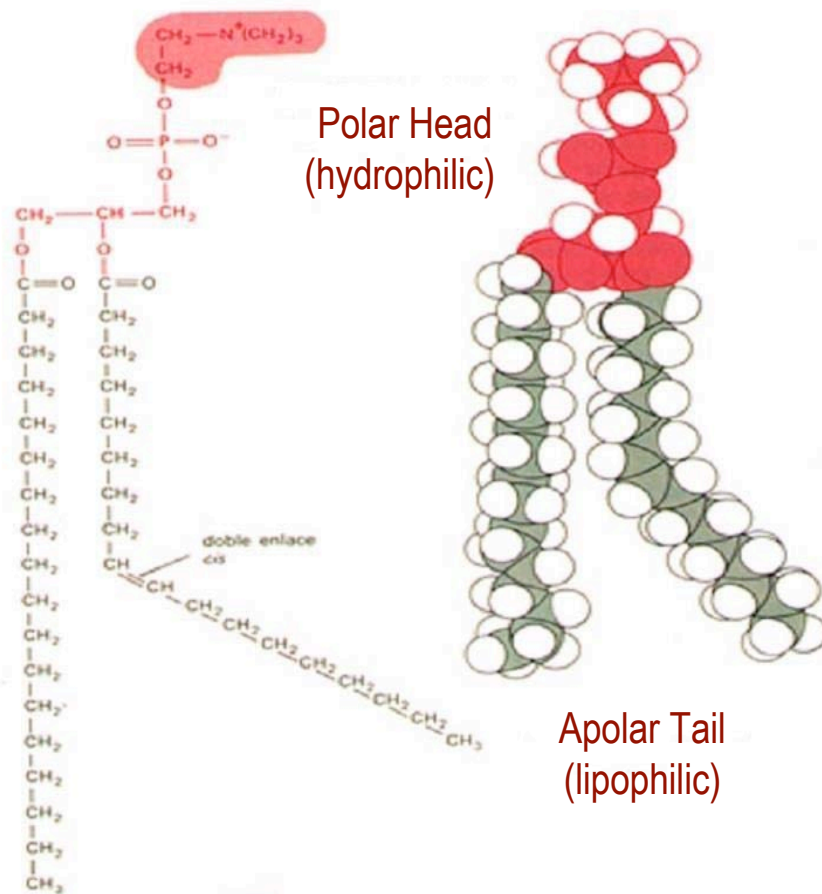
Phospholipids in monolayer

Definition



Nano LPD's

Phospholipid Structure



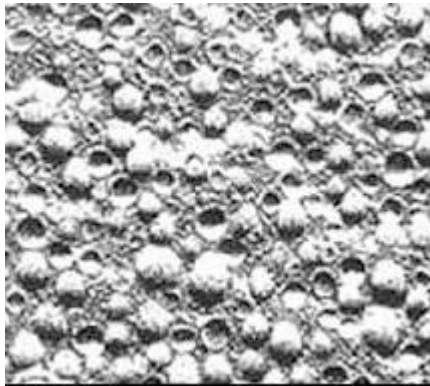
Composition

- They are mainly made of natural origin phospholipids
- Their characteristics are :
 - To have a hydrophilic part (polar head)
 - and to have a lipophilic part (apolar tail)

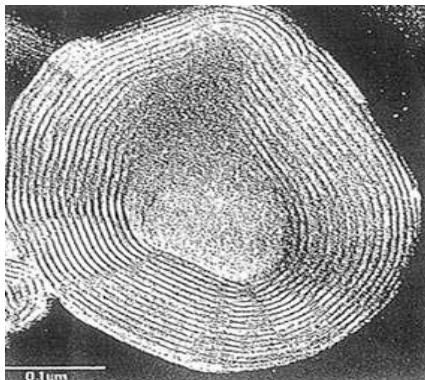


Nano LPD's

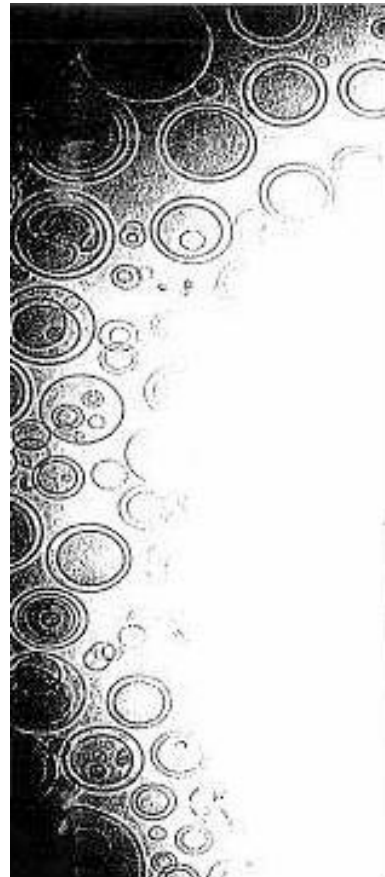
Clasificación



Nano LPD's unilamellars



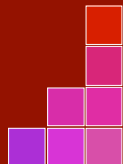
Nano LPD's multilamellars



Nano LPD's oligolamellars

- Size:
 - Small (diameter < 100 nm)
 - Big (diameter > 100 nm)

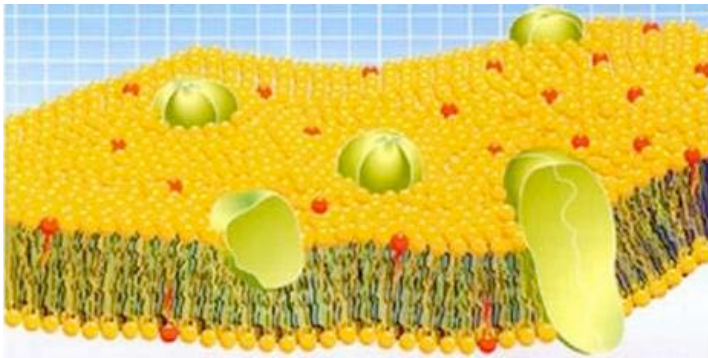
- Number of bilayers:
 - Unilamellars
 - Oligolamellars
 - Multilamellars



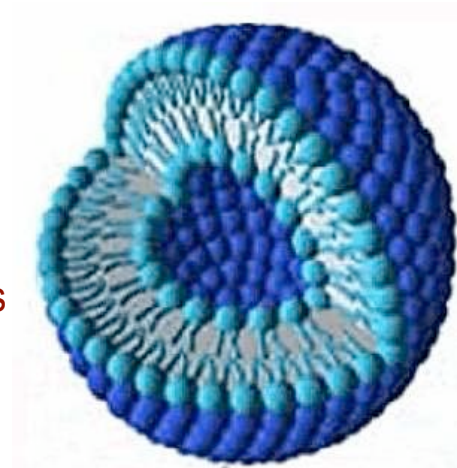


Nano LPD's

Analogy between the cellular membrane structure and Nano LPD's



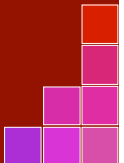
Cellular Membrane



Nano LPD's

Usages and Advantages

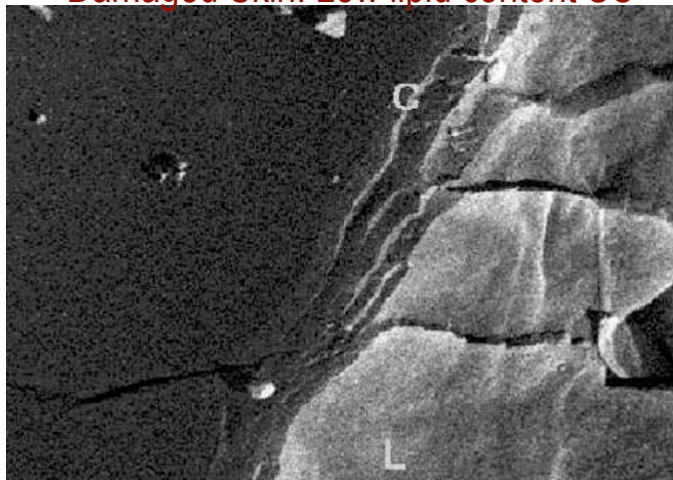
- They are **natural** delivery systems of active ingredients
- They are **controlled** and **released** carrier systems
- They are analogue structures of the cellular membranes (phospholipids)
- They increase the efficacy and decrease the unwanted side effects of the active ingredients (toxicity)





Nano LPD's

Damaged Skin. Low lipid content SC

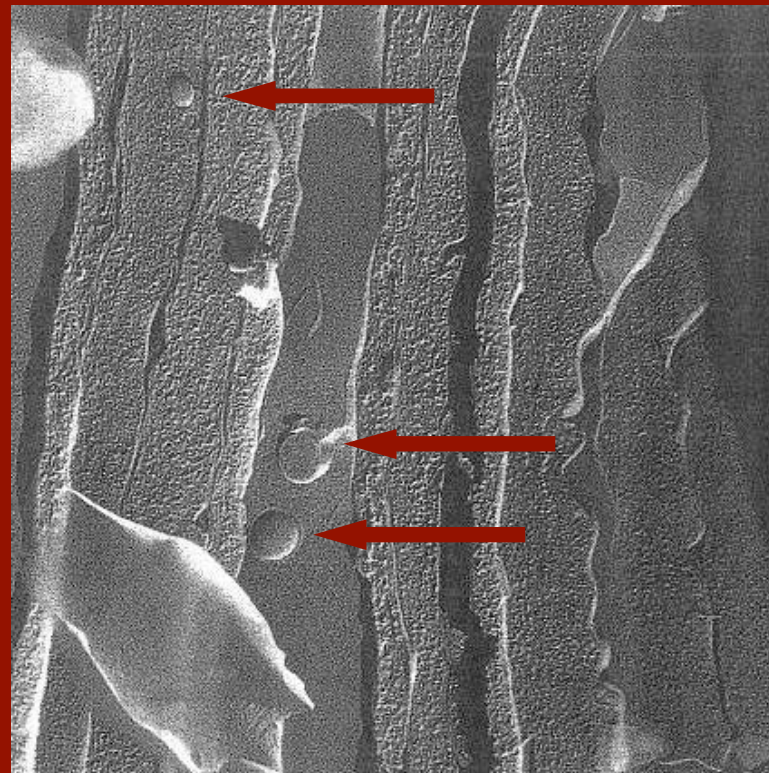


Skin treated with Nano LPD's. Re-epithelialized SC



Usage and Advantages

Image of the Nano LPD's going through the SC



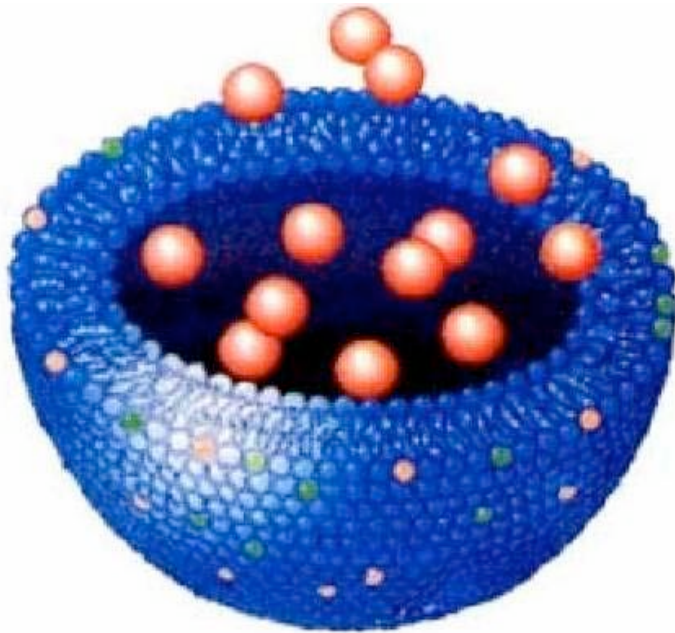
Study carried out by Dr. A De La Maza. Departament of Surfactants.
CSIC, Barcelona





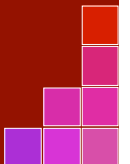
Nano LPD's

Interaction Nano LPD's – active ingredient



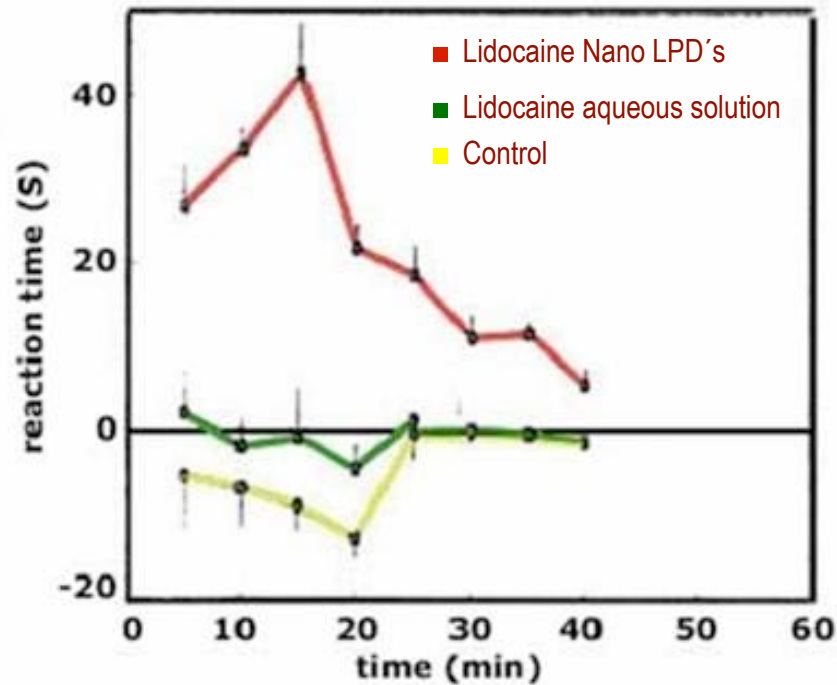
Usage and Advantages

- The active ingredients reallocate at the interface of the Nano-LPD's
- Because of the structure and also the phospholipid bilayer composition, the Nano-LPD's can incorporate :
 - Hydrophilic Actives (within the vesicle)
 - Lipophilic Actives (between the layers)



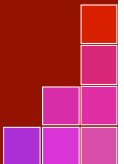
Nano LPD's

Improvement of the analgesic action of the lidocaine (topically applied)



Usages and Advantages

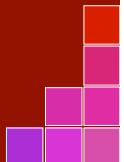
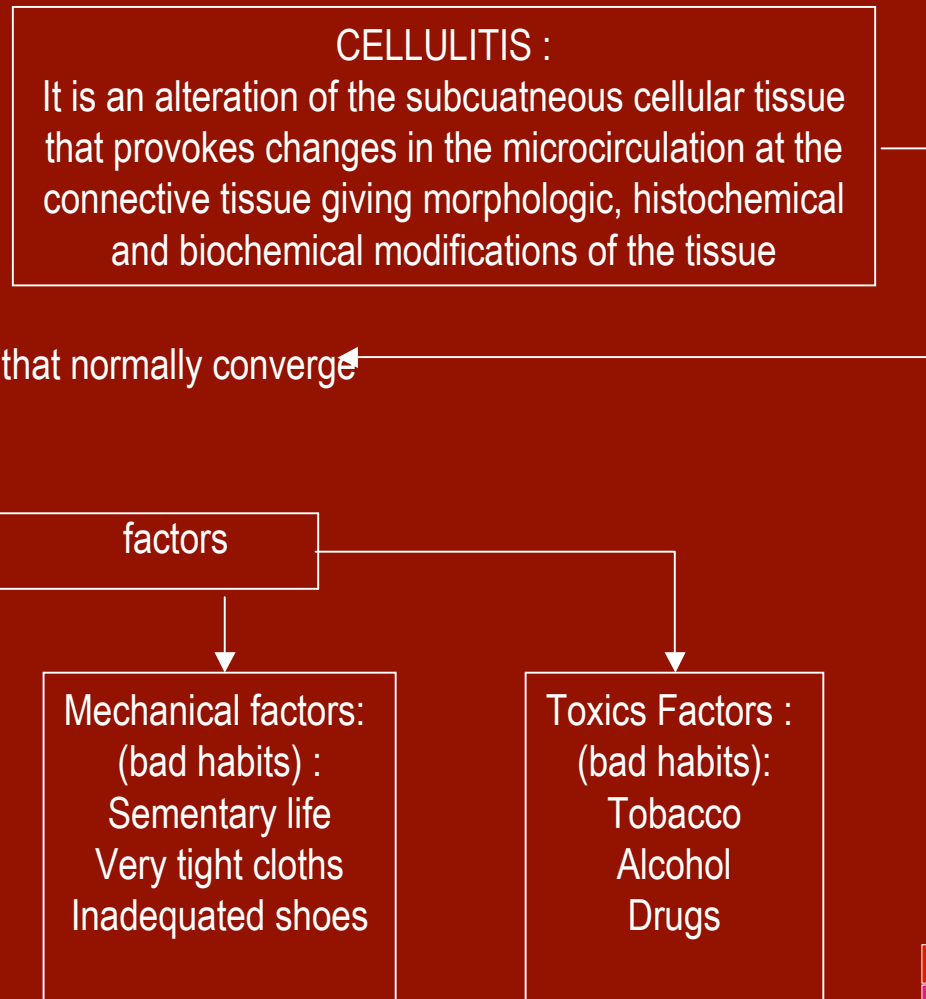
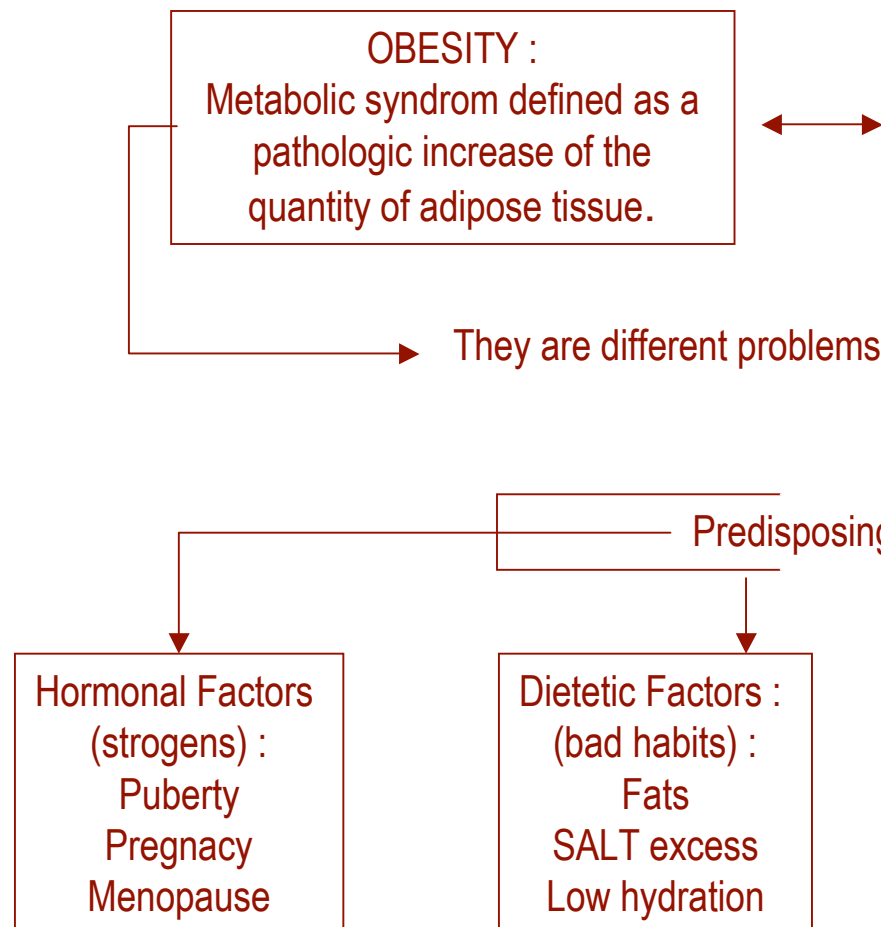
- Prolongation of the bioavailability of the active ingredient
- Better absorption, penetration and diffusion of the active ingredient
- Stabilization of the active ingredient
- Introduction of alternative administration ways of the active ingredient





Obesity and

cellulitis



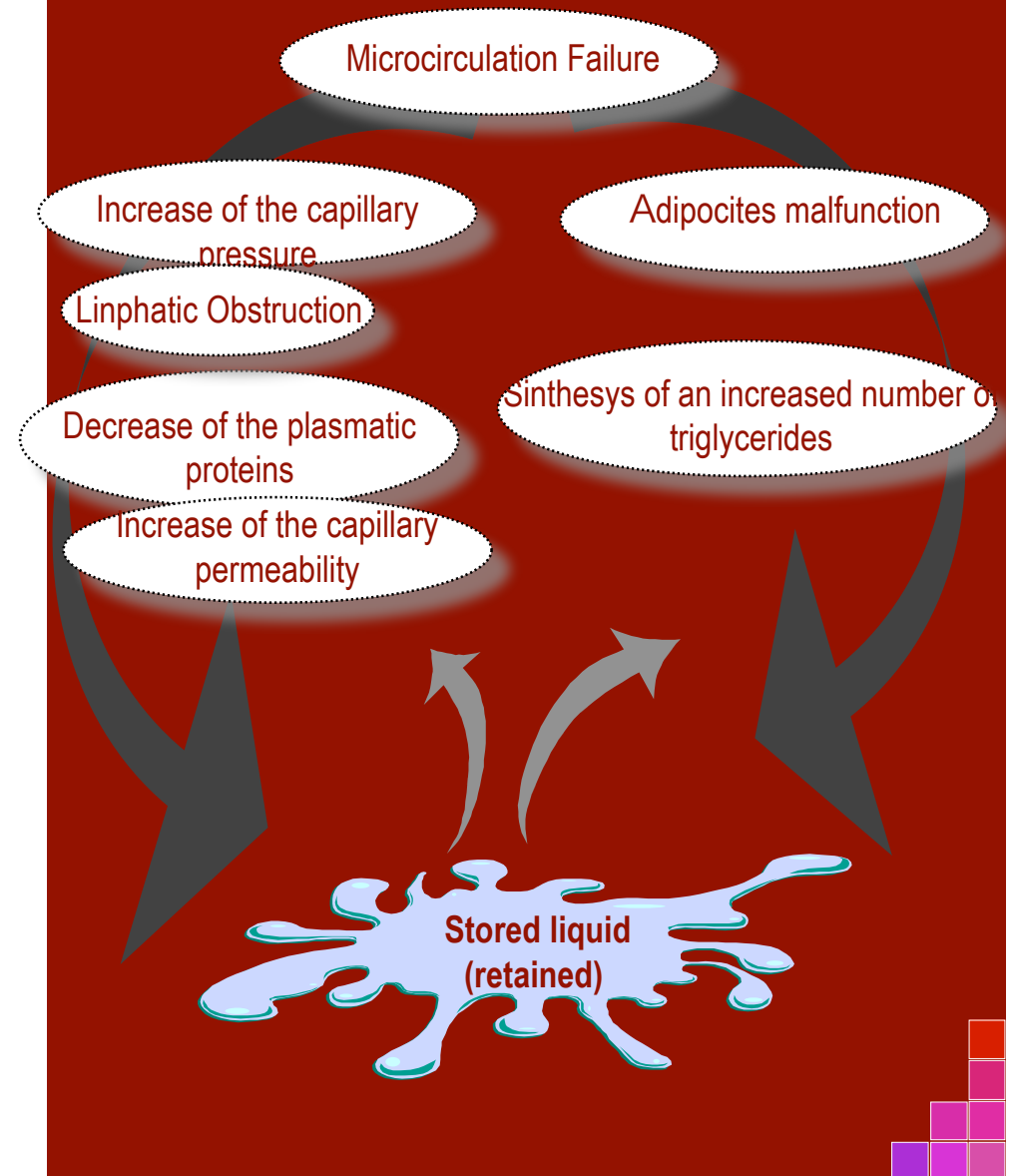


Actions

Required Actions :

- Lipolitic action
- Activation of the blood circulation
- Regulation of the capillary permeability.

malfunction and action mechanism



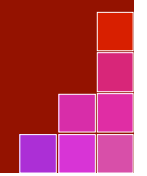
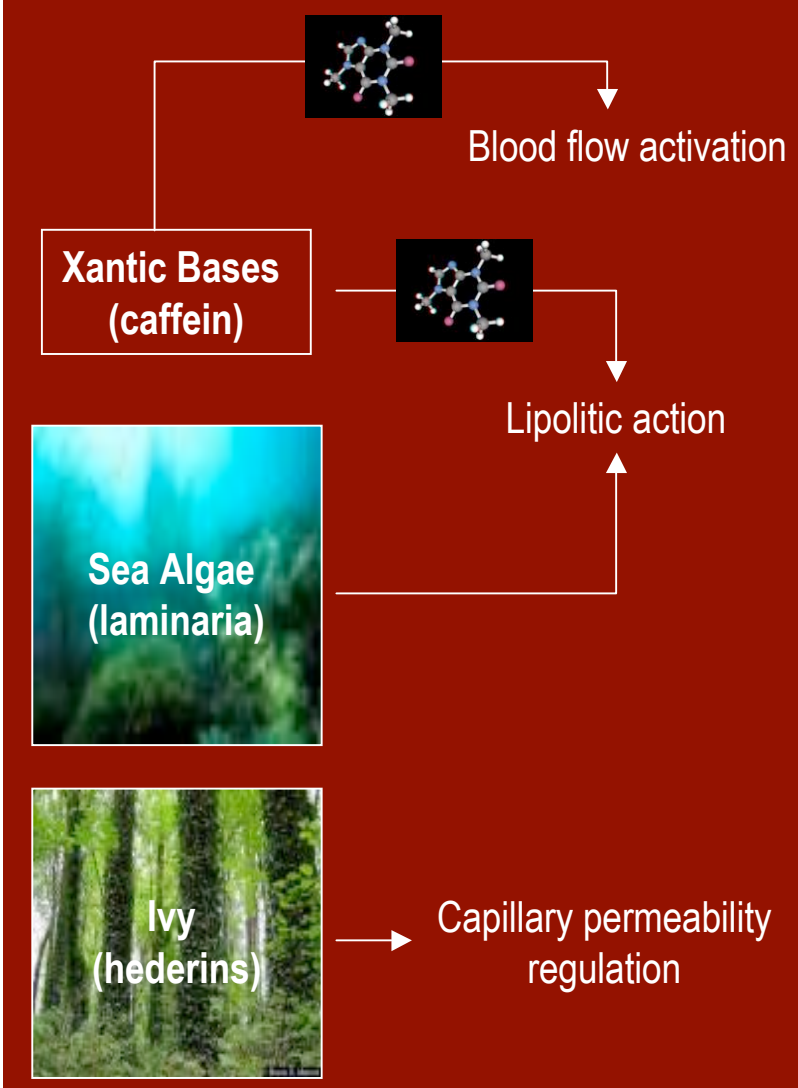


Nano LPD's Slimming

composition and mechanism of action



Nano LPD's Slimming





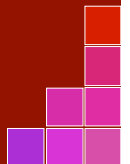
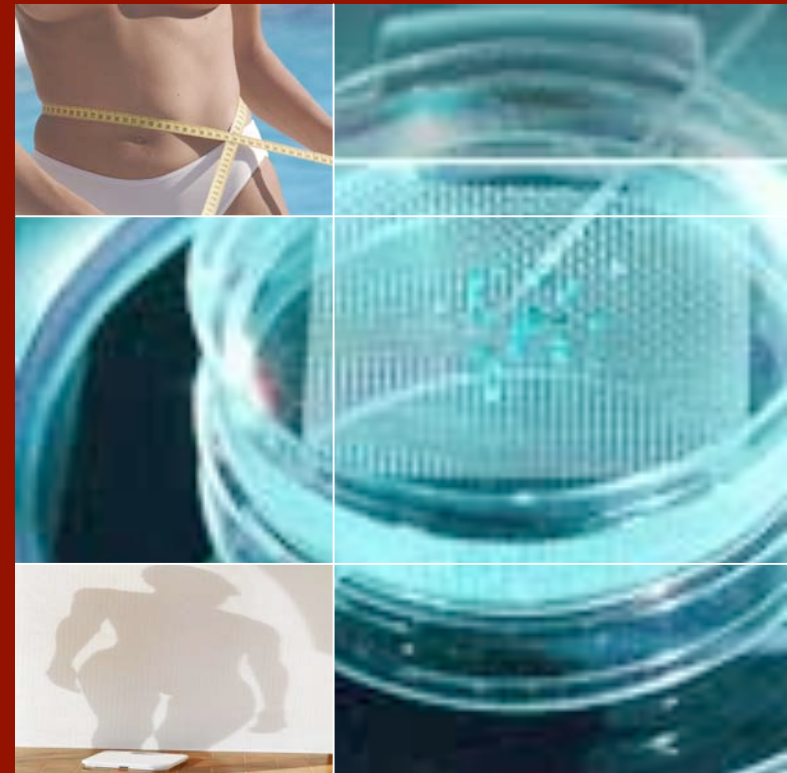
Nano LPD's Slimming Efficacy Test

➤ In vitro test :

- Phosphodiesterase Inhibition
- AMPc Concentration
- Free Fatty Acids (FFA)

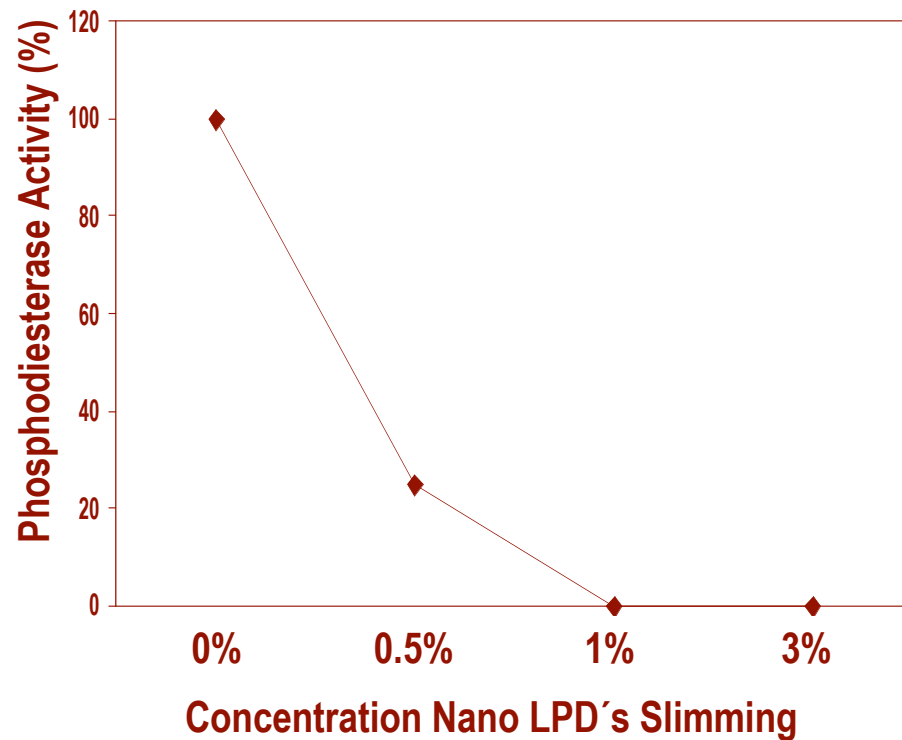
➤ In vivo test :

- Assessment of the infiltrated fat decrease at the dermis
- Perimeter of the thigh area





Nano LPD's Slimming Phosphodiesterase Inhibition

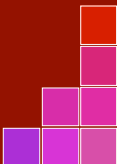


➤ Objective :

Measurement of the phosphodiesterase activity inhibitor (AMPc-PDE), which is responsible of the AMPc (lipase activator) inactivation

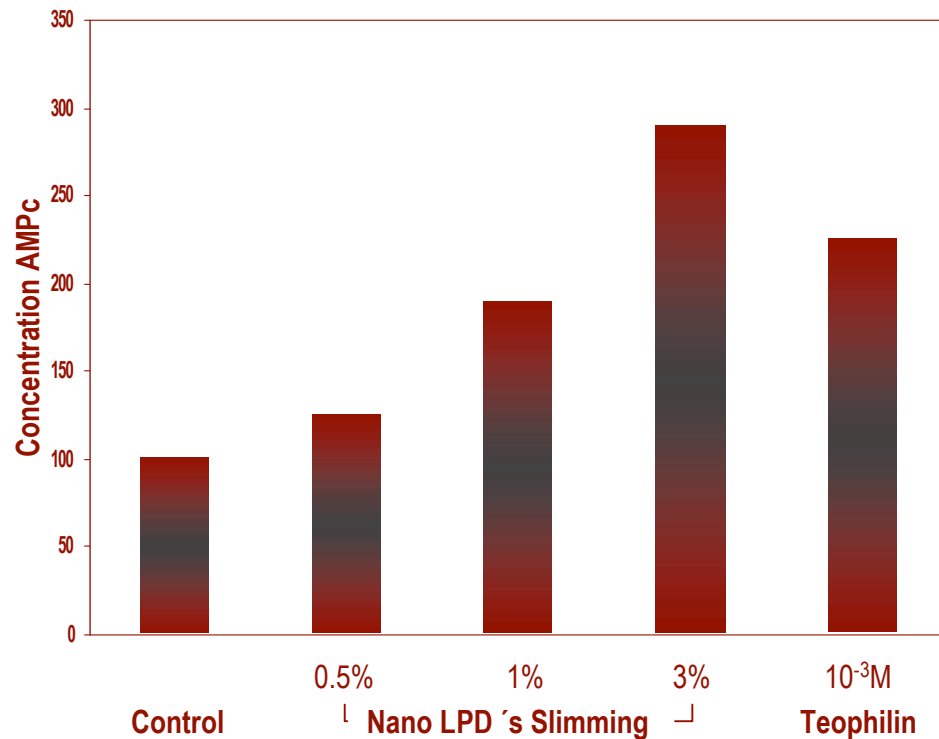
➤ Methodology :

- Phosphodiesterase [3H] cAMP SPA enzyme
- Enzyme : AMPc-PPE bovine heart
- Positive Control : teophilin
- Negative Control : enzyme free culture
- SPA Technology for the evaluation (Scintillation Proximity Assay)
- Efficacy assesment of Nano LPD's Slimming at 0.5%, 1% y 3%





Nano LPD's Slimming AMPc Concentration

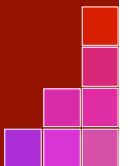


➤ Objective :

To assess the increment of AMPc in human adipocytes after having applied with Nano LPD's Slimming

➤ Methodology :

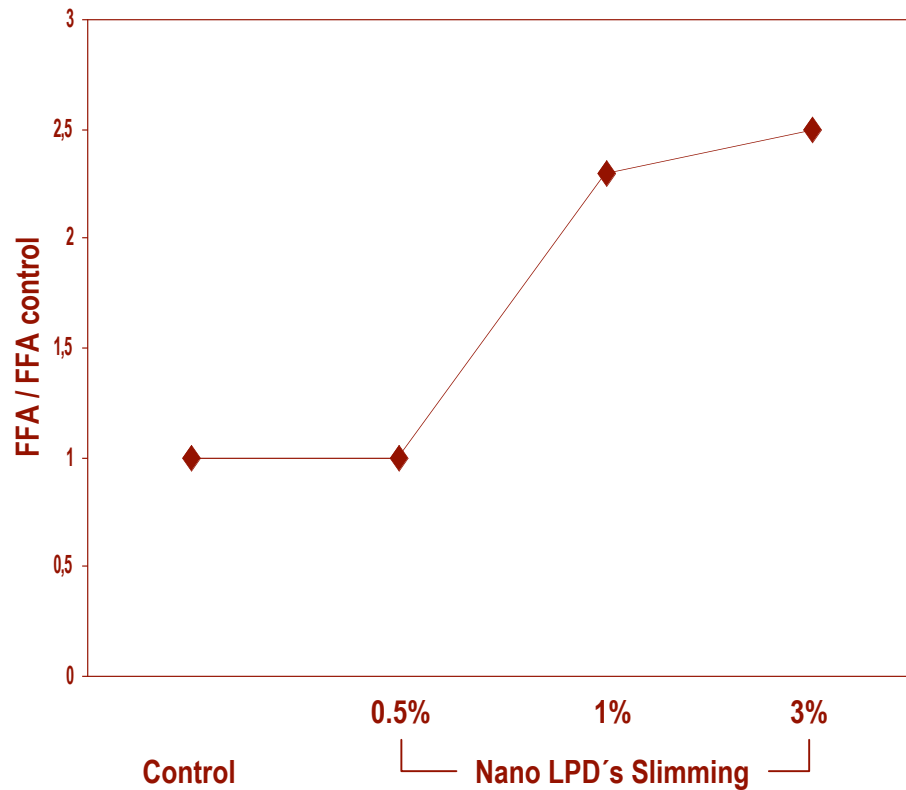
- Enzymatic Immunotest (Biotrack kit, Amersham, RPN 225)
- Culture : human adipocytes
- Positive Control : teophyllin
- Negative Control : culture
- Efficacy evaluation of Nano LPD's Slimming at 0.5%, 1% y 3%





Nano LPD's Slimming

Free Fatty Acids (FFA)

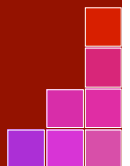


➤ Objective :

To assess the liberation of FFA in human adipocytes after having applied with Nano LPD's Slimming

➤ Methodology :

- Enzymatic colorimetric measurement
- Waco Chemicals 994-75409 (Kit Nefa-C)
- Culture : human adipocytes
- Negative Control : culture
- Efficacy evaluation of Nano LPD's Slimming at 0.5%, 1% y 3%

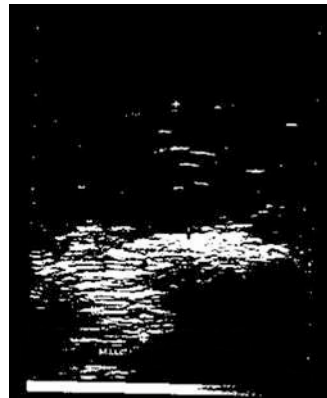




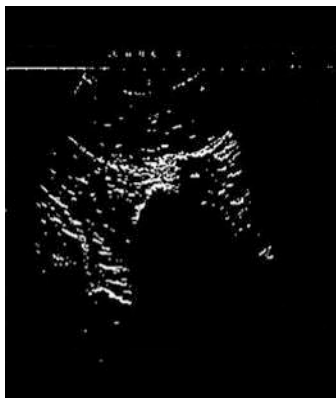
Nano LPD's Slimming in vivo test



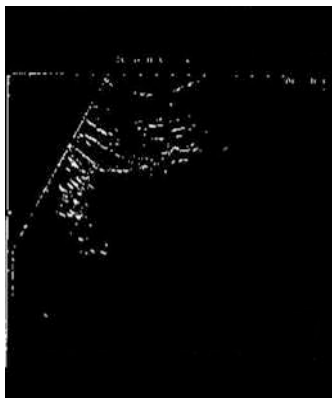
Left leg



Right leg



Volunteer 10



➤ Objective :

To assess the decrease of infiltrated fat at the volunteers' dermis with cellulitic symptomatology

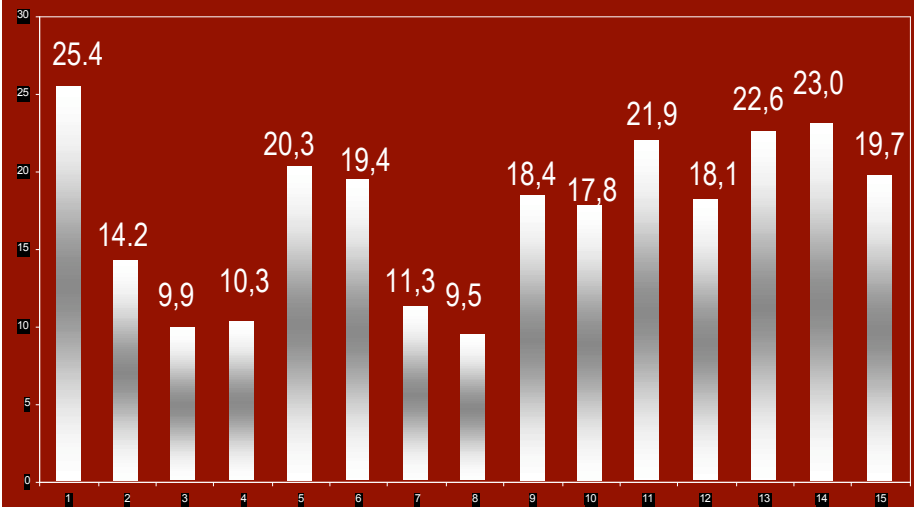
➤ Methodology :

➤ Echographic measurement at the thigh areas

➤ Application of a cream twice a day containing 5% of Nano LPD's Slimming vs. Placebo cream

➤ Echography at the beginning and at the end of the treatment (28 days)

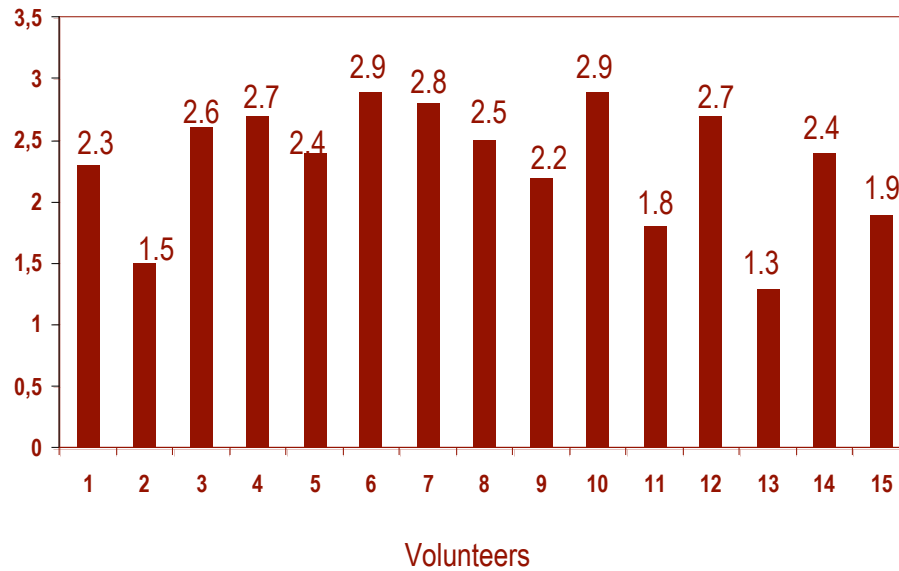
➤ Results : 17.5% average reduction of the infiltrated fat





Nano LPD's Slimming thigh perimeter

Perimeter variations (cm.)



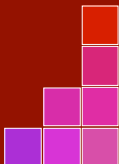
➤ Objective :

To assess the decrease of thigh area perimeter through application of a cream containing 5% of Nano LPD's Slimming compared to a placebo

➤ Methodology :

- Centimetric measurement of the thigh perimeter
- Measurement at the beginning and at the end of the treatment (28 days)
- Echography first day of the treatment and at the end of the treatment (28 days)

➤ Results : 2.3 cm. of perimeter average diminution



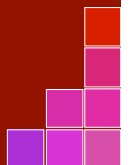
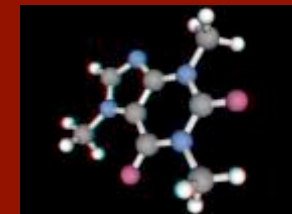
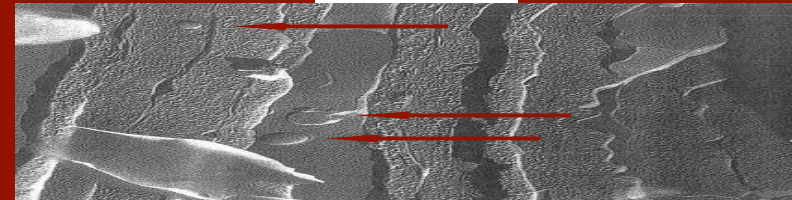


Nano LPD's Slimming

- New technology :
 - Nanosystems
 - Natural
 - Controlled and sustained release
- Natural active ingredients of proven efficacy
 - Laminaria
 - Caffein
 - Ivy

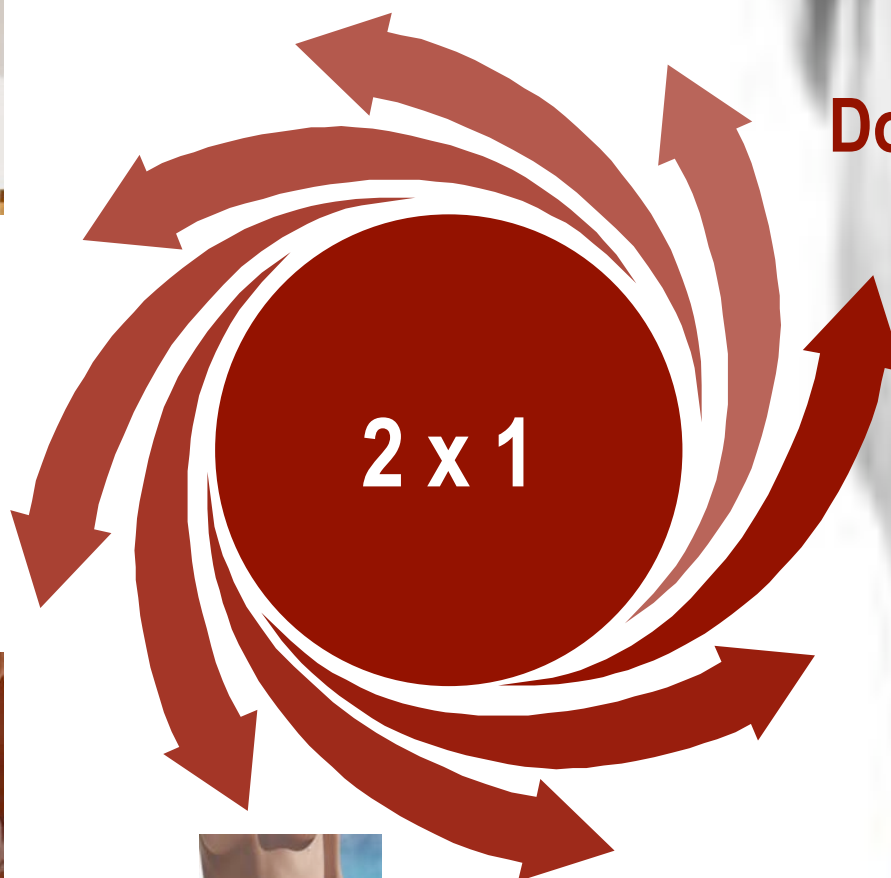


Ø < 250nm





Nano LPD's Slimming



Dosage : 3-5%

