





# Active Ingredients for Pharma and Nutraceutical/Cosmetics: 2 manufacturing sites



### GAILLAC SITE

(France)

In operation since 1976

GMP, FDA and EMA approved Iso 14001, Ohsas 18001

Plant extraction & Purification Hemi-synthesis, Chemical Synthesis High potent

> 225 associates 90% Pharma Activity

>80 API and active ingredients >1500 MT of dry plant processed/year

### VIRREY DEL PINO

(Argentina)

In operation since 1964

GMP certificate, USP Verified Iso 9001 and 14001, Ohsas 18001

Plant extraction & Purification
Animal tissue extraction
Hemi-synthesis

100 associates 90% Pharma Activity

>1500 MT of Animal tissue processed/year







# Active Ingredients for Pharma and Nutraceutical/Cosmetics



# Nutraceutical & Cosmetic Ingredients

Raw material sourcing Extraction Concentration Hemi-synthesis Purification Drying



# Pharmaceuticals Intermediates & Active Ingredients

#### Fine Chemistry

Acetylation, Chlorination Fluorination, Methylation Racemisation, Reduction, Hydrogenation, ...

Purification, isolation Drug Delivery



#### 480 tons of plant-derived APIs/year

• Vinca roots: 300 T/y; Vinca leaves: 300 T/y

• Serenoa repens seeds : 250 T/y ; Ruscus : 200 MT / year



# Active Ingredients for Pharma and Nutraceutical/Cosmetics



### 2 production technology platforms



#### Plant Cell Culture (PCC)

- API production from vegetable origin
- Adapted to rare plant species, protected or difficult to grow
- Facilitated extraction and purification
- Source of new APIs (ex: triptolide)
- Green chemistry approach



Plant → Callus → Cell suspension → Wave bioreactor



## Supercritical fluids (SC-CO<sub>2</sub>)

- Solvent-free approach, green chemistry
- Patented processes for products development, lifecycle management or formulation of APIs

cGMP compliance to manage a large diversity of APIs, including poorly bioavailable and insoluble APIs, from a few grams to commercial batches (reactors from 0.25 to 50 litres)



