

The logo for Gova Ingredients, featuring the word "Gova" in a large, white, serif font above the word "Ingredients" in a smaller, white, serif font, all contained within a dark blue hexagonal shape.

Gova
Ingredients

Research & Trading

PREBIULIN FOS

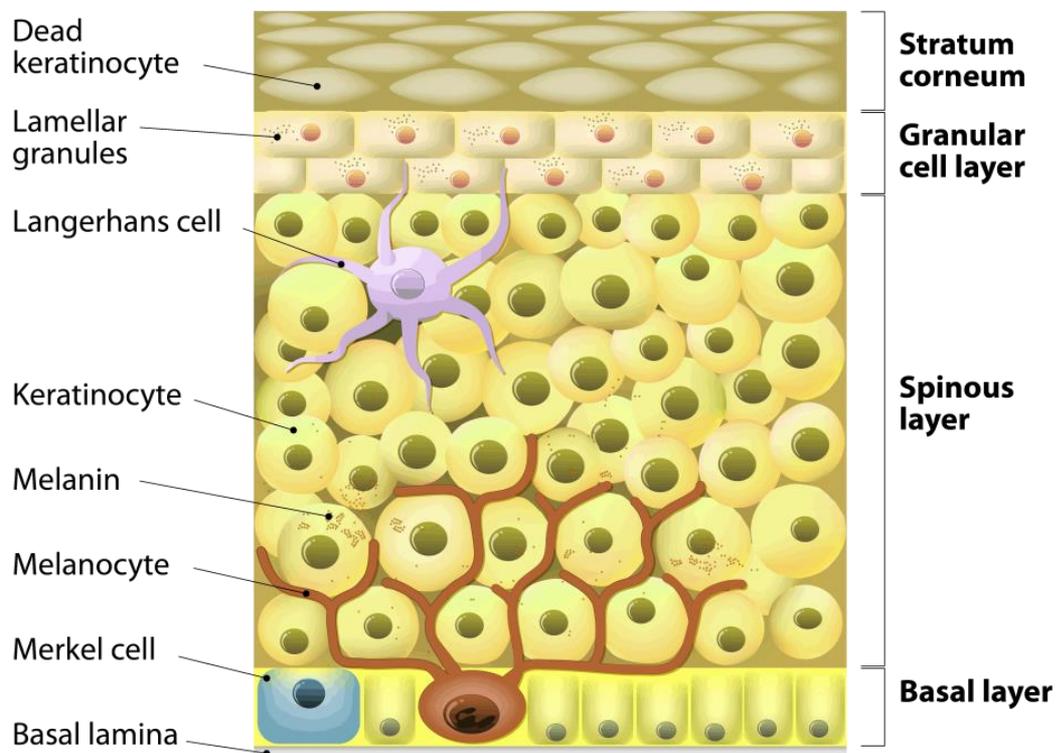
**Unlocking the skin
microbiome code**





The classic skin barrier

Epidermis





The real skin barrier

- **A layer of microorganisms: Stratum Microbiotum**

- **Epidermis**

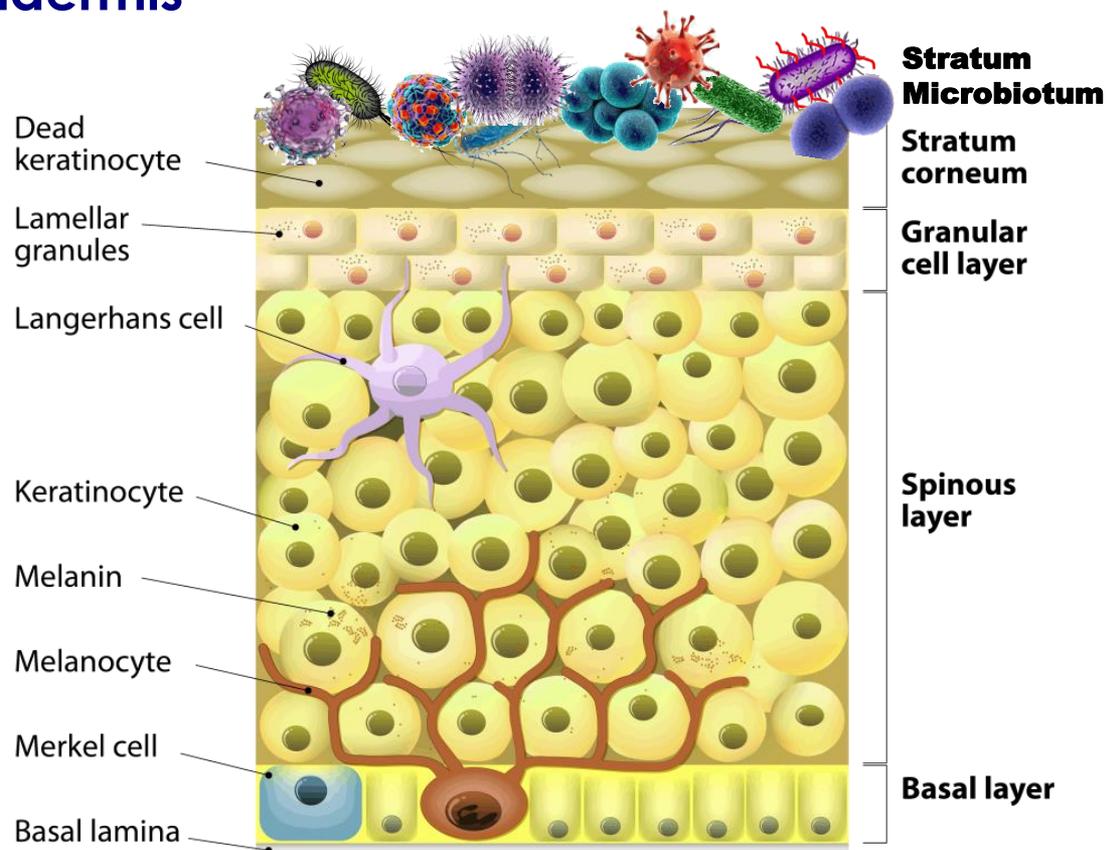




Image Microorganisms

● **Microorganisms are always associated with**

- Death
- Sickness
- Lack of hygiene
- Bad smell





Image Microorganisms

Some microorganisms are beneficial

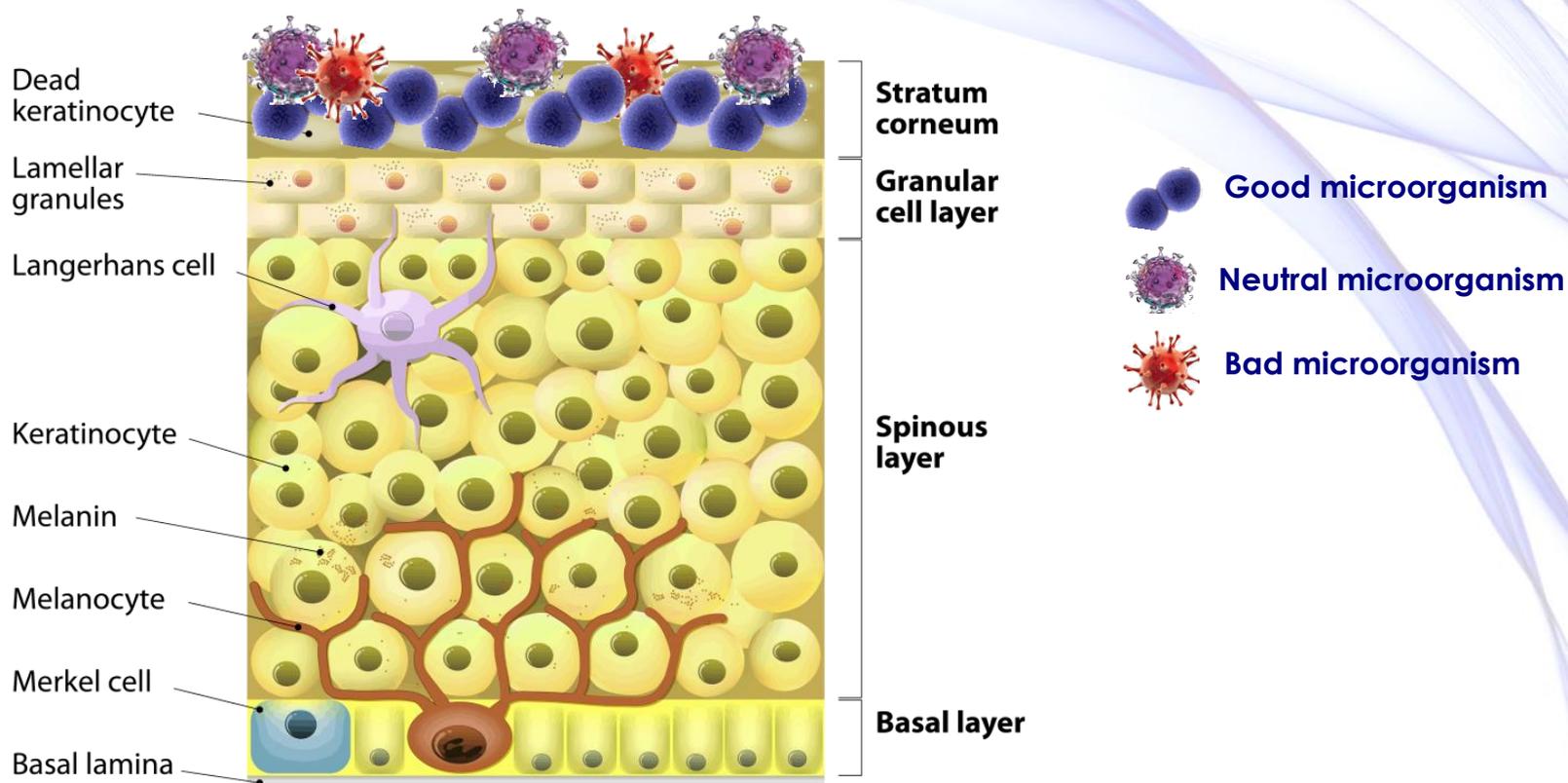
- Wine
- Beer
- Bread
- Camembert cheese
- Roquefort cheese
- Hyaluronic acid , DHA



What about the microorganisms on our skin?



Microorganisms Skin

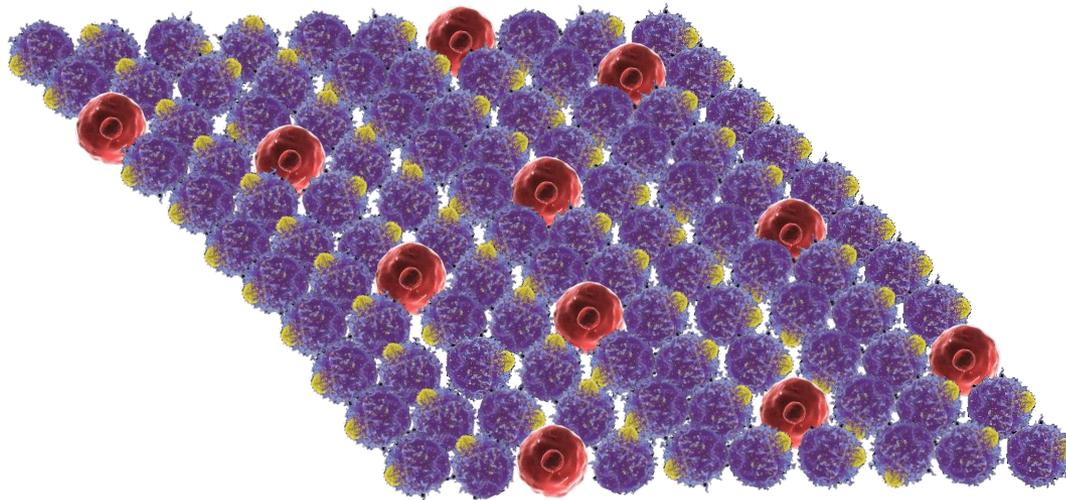




Microorganisms Skin

● Epidermis

- The microorganisms outnumber the skin cells
- 10% human cells
- 90% microorganisms (up to 1000 species)





The delicate balance

- **The skin flora + skin are in balance...in symbioses**
- **Skin provides food**
 - 1) Dead skin cells
 - 2) Sweat (fatty acids)
 - 3) Skin lipids

No skin => no food => no growth

However skin is not everywhere a party buffet, but mainly a desert





The delicate balance

- **Microorganisms provide**

- Personalized acid pH
- Personalized antimicrobial peptides
- Personalized genocide

No skin flora => no protection => immune system overloaded => Sickness/death





The guards have to stay outside

- **Bacteria on the skin => Protection**
- **Bacteria in the skin => Pathogen**
- **The microorganism educated the skin immune system:**
- **Personalized flora**
↓
- **Personalized training**
↓
- **Personalized immune system (from baby to now)**

MICROORGANISMS ON THE SKIN ARE OUR GUARDIANS



Your personal mantle of bacteria

- **1000 musketeers: All for one, one for all**



- **The skin flora is competing for the same food**





Change of guards

- Your immune system is adapted to the previous guarding microorganism
- New flora => not adapted immune system => skin problems





Angels and Demons

- **There are no 100% good and 100% bad bacteria!**
- **Skin problems start with:**
 1. Microorganism on the wrong place (in the skin): *C. xerosis*
 2. Change in food (cosmetics) => one or more becomes dominant:
P. acnes, *M. Furfur*
 3. Change in environment (UV, heat, wind, ...)
=> one or more becomes dominant
 4. Disinfectant, preservatives, antibiotics => the population changes
 5. Aggressive products (shower gel, shampoo, depilation, AHA,...)
 6. Age => less skin cells, less sebum, less lipids => less food/changed food



Angels and Demons

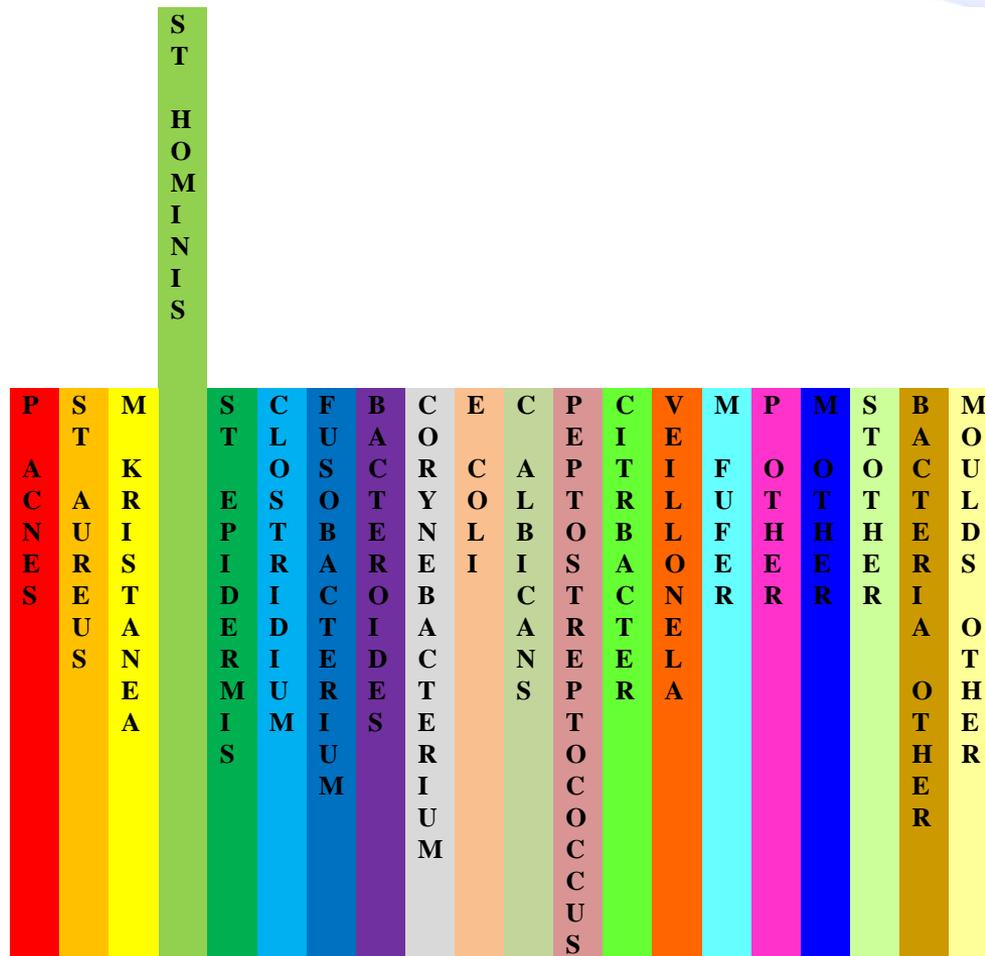
- Stratum Microbiotum in harmony - Balanced

P	S	M	S	S	C	F	B	C	E	C	P	C	V	M	P	M	S	B	M
A	T	K	T	T	L	U	A	O	C	A	E	I	E	F	O	O	T	A	O
C	A	R	H	E	O	S	C	R	C	L	P	T	I	F	T	T	O	C	M
N	U	I	O	P	S	O	T	N	O	B	T	R	L	U	H	H	T	T	O
E	R	S	M	I	T	B	E	E	L	O	O	B	L	F	E	E	H	E	R
S	E	T	I	D	R	A	R	B	I	S	S	A	O	R	R	R	E	R	I
	U	A	N	I	I	C	O	A	C	T	T	N	N					A	O
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			I	R	D	E	E	E		P	T	E	L					H	E
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				S	U	M		I		O	C							O	T
					M			U		C	C							T	H
								M		C	U							H	E
										S	S							E	R



Angels and Demons

- Stratum Microbiotum disturbed – Out of Balance





Demons Skin

Staphylococcus aureus



Propionibacterium acnes



Escherichia coli



Bacteroides



Clostridium



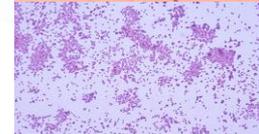
Fusobacterium



Peptostreptococcus



Veillonella



Citrobacter



Candida albicans



Malassezia furfur



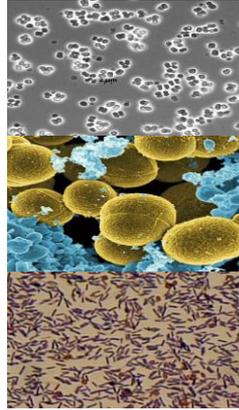


Balanced Demons Skin

Staphylococcus hominis

Staphylococcus epidermidis

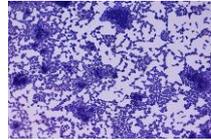
Corynebacterium xerosis





Guardian Angels Skin

Kocuria kristanea
(*Micrococcus kristinae*)





Microbiological sport:

A matter of balance

● Experience

- Make acquaintance with as many as possible micro organisms
= training like athletes

● Prevention

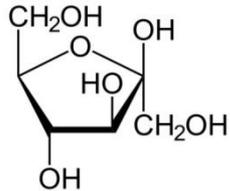
- Make sure no bacteria becomes dominant
- Use cosmetics that do not disturb the flora...so beware of preservatives
= healthy food

● Fortifying

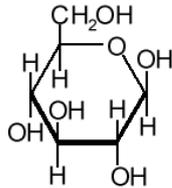
- Use cosmetics that feed the protective microorganism. New!



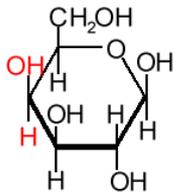
Sugar is the energy source



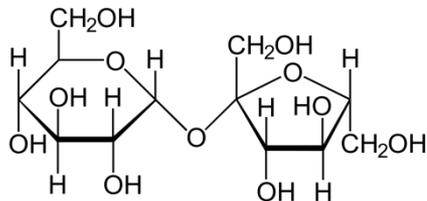
- **Fructose – F - monosaccharide**



- **Glucose – G - monosaccharide**



- **Galactose – G - monosaccharide**



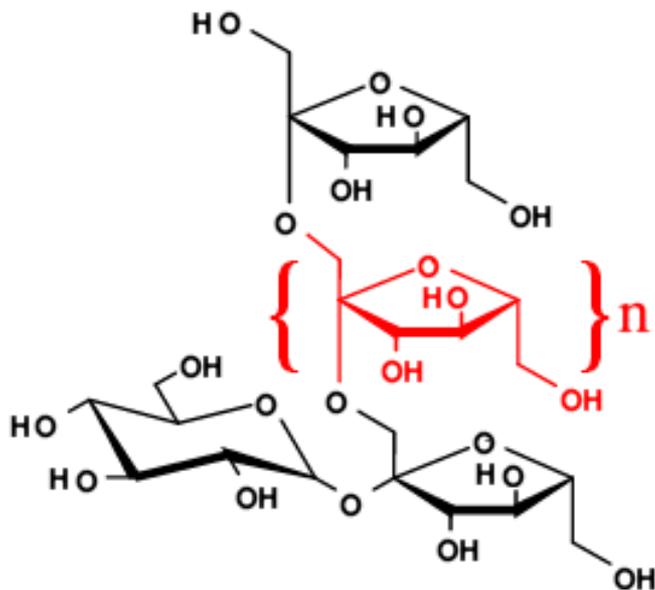
- **Sucrose – GF - disaccharide**

Enzymes such as sucralose, amylase are commonly present in microorganisms and mammals.



And then there is Inulin

- A sugar that cannot be digested easily:
- **INULIN – GF_n (n=2-60)**



- Only the inulinase enzyme can digest inulin.



The source of Inulin

- **Chicory root (Intibus chichorium)**
- **Linear GFn**
- **Hydrolysed Inulin (FOS)**
- **Linear GFn and Fn**





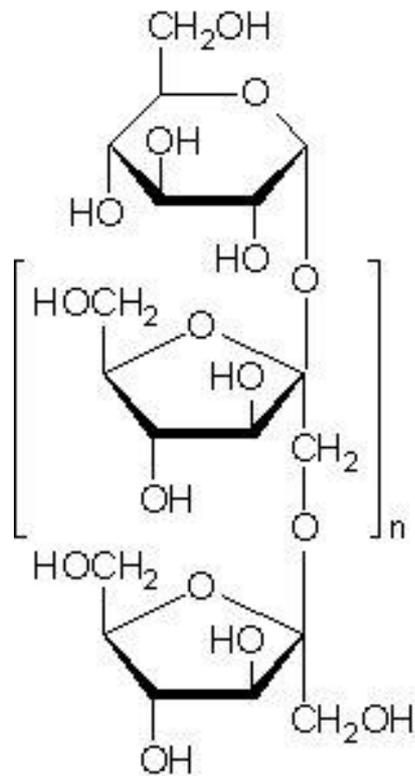
Prebiotic balance

- **Residual microflora can digest the prebiotic**
=> Balancing effect in case of disturbance
- **Foreign (pathogenic) microorganisms cannot digest the prebiotic**
=> They lose the competition of food=> they fade away



New Prebiotic – preBIOLIN FOS

- High soluble fructose oligosaccharide
- Fn, n=10





preBIOLIN FOS - demonstration of activity

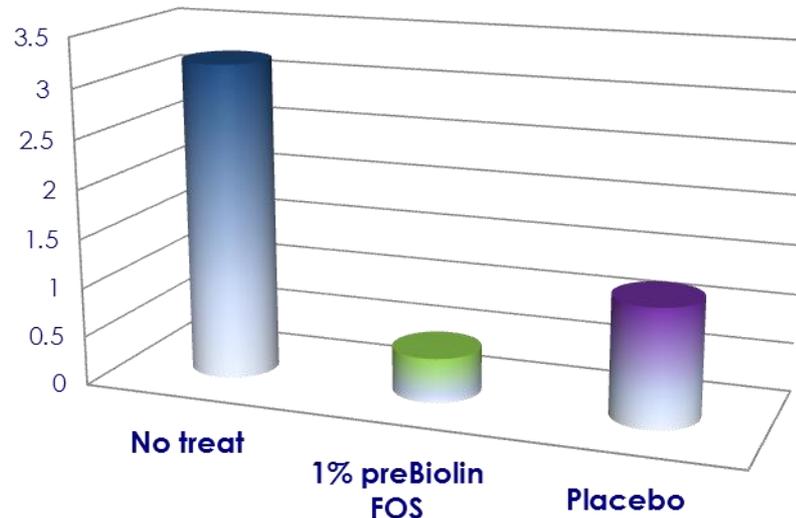
Fermentation

St aureus	
St haemolyticus	
P acnes	
E coli	
B bivius	
B fragilis	
B intermedius	
Clostridium	
Fusobacterium	
Peptostreptococcus	
Veillonella	
Citrobacter	
C albicans	
St epidermidis	
C xerosis	
K kristanea	

PREBIULIN FOS - demonstration of activity

Skin explants

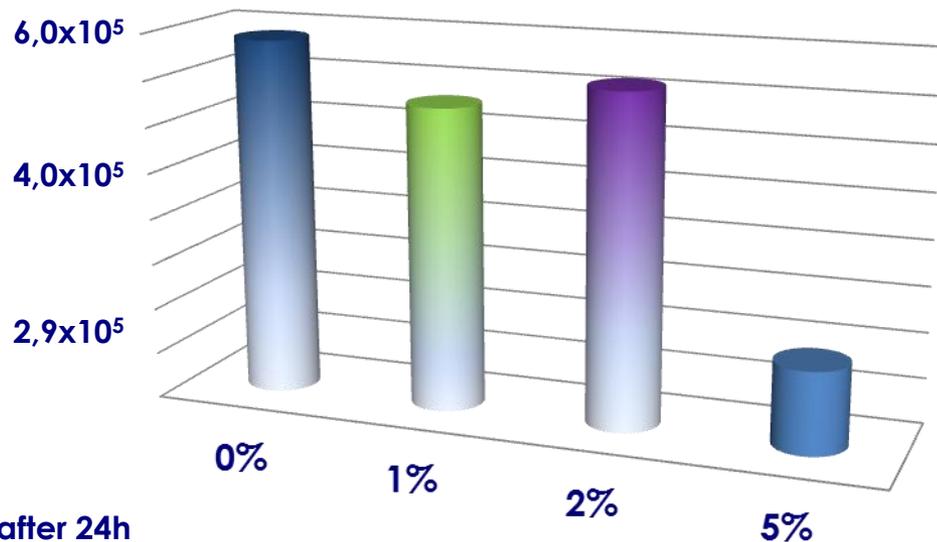
- 12 Skin explants with natural skin flora inoculated with extra 10^7 *St hominis*
- 3 skin explants not treated (No treat)
- 3 skin explants treated with 50% ethanol (Placebo)
- 3 skin explants treated with 50% ethanol + 1% PREBIULIN FOS



PREBIULIN FOS - demonstration of activity

Inhibition test P.acnes

- P.acnes was incubated in anaerobic conditions for 24h in the presence of different concentrations of PREBIULIN FOS. The bacteria was quantified by DNA analysis through specific PCR conditions
- The initial population at T0 was $4,8 \times 10^5$



Population P.acnes after 24h



PREBIULIN FOS - demonstration of activity

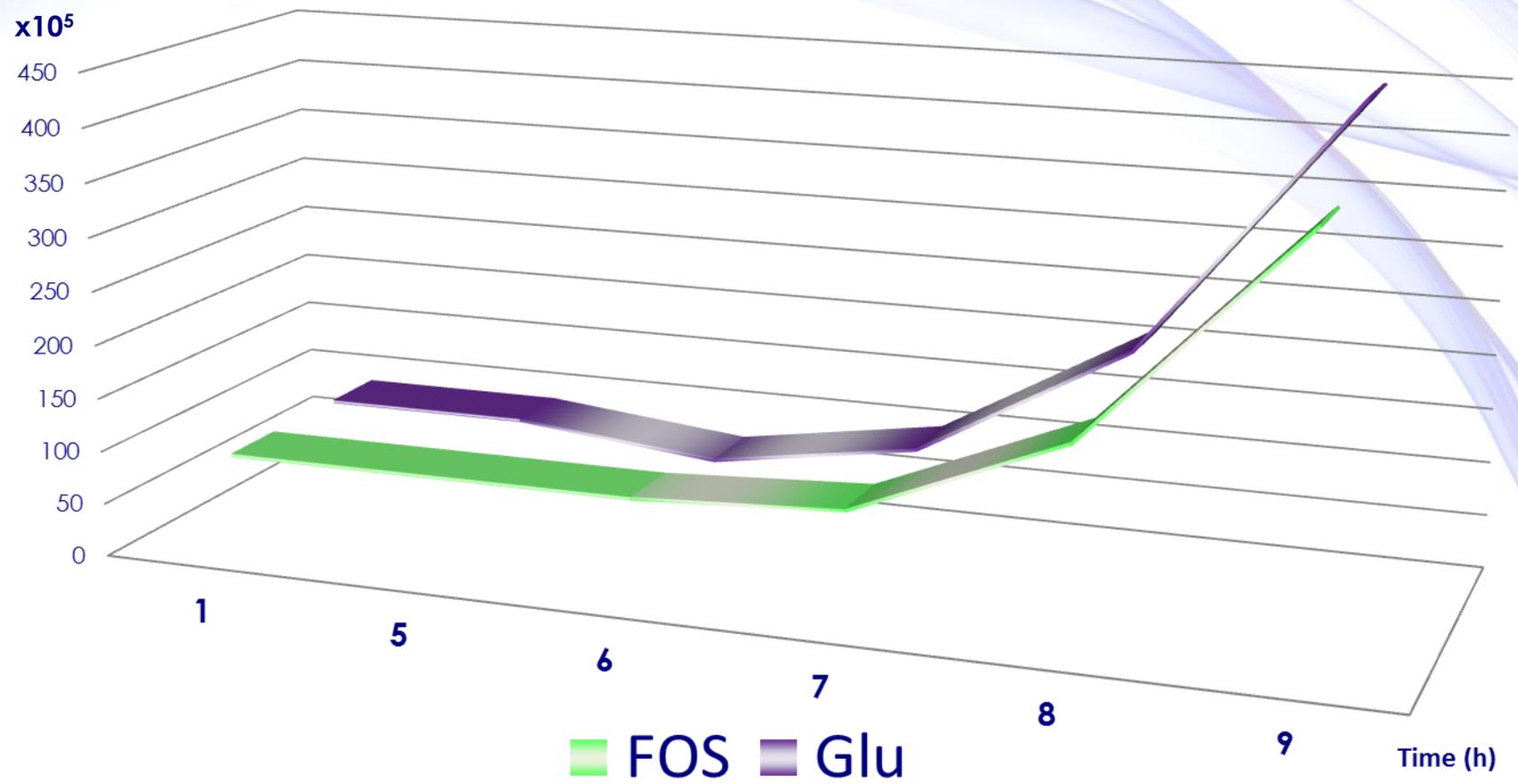
Inhibition test St. Aureus

- St. Aureus was grown on a BHI medium containing 1% PREBIULIN FOS during 8h. The growth was followed by Biorad and the slope of the growth curve was determined. The growth was compared to Glucose.

Prebiulin FOS	Glucose	Growth Inhibition
100	131	-24%

PREBIULIN FOS - demonstration of activity

Inhibition test St. Aureus



PREBIULIN FOS reduces the speed of growth with 24%

PREBIULIN FOS

Application



PREBIULIN FOS

- Daily harmonization
- Balancing the skin flora
- Fortifying the Stratum Microbiotum
- Combats bad odour (deo, feet care, elderly people)





Research & Trading

**THANK YOU FOR
YOUR ATTENTION**

