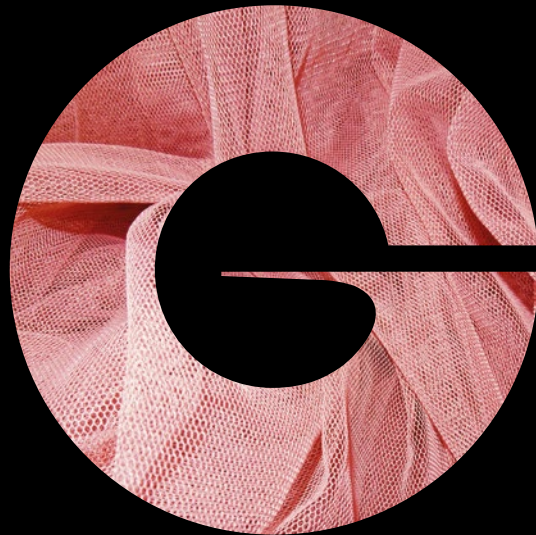


Active Beauty
Yogurtene® Balance
Skin microbiome rejuvenation
for skin hydration

Crafted by white technology



Focus on the product

A strong and balanced microbiota for a healthy young skin

*Stratum microbium*TM represents the global population of microorganisms living in and on our skin surface. Skin microbiota ensures the good health of our skin and provides a layer of protection from ageing and external factors, while participating to its general healthy condition¹.

It is now established that the skin microbiota evolves all along our lifetime. Some typical evolutions have now been observed, with major trends in the microorganisms population of ageing skin microbiota compared to younger skin^{2,3}:

- ▶ in terms of main phyla, *Actinobacteria* are significantly reduced, while *Proteobacteria* are more abundant,
- ▶ in terms of main genera, *Cutibacterium* (formerly *Propionibacterium*) are significantly less abundant, while *Corynebacterium* are found in higher proportion. Trends have also been established with an increase of *Enhydrobacter* and *Acinetobacter*.

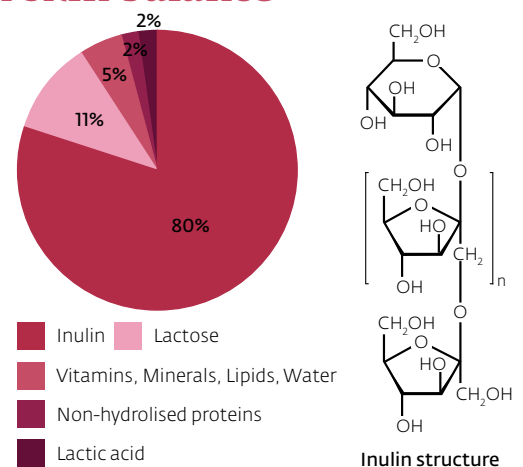
On the other hand, it is also well-known that ageing skins are more subject to dehydration, globally exposing men and women to dry skin issues when getting older⁴.

Yogurt & prebiotics, a perfect blend to reach skin balance

Prebiotics are generally short chain carbohydrates, found naturally in some fruits & vegetables. Unlike a probiotic, it does not contain any microorganisms itself. These substances are designed to "selectively stimulate the growth and/or activity of beneficial bacteria species already resident"⁵.

Yogurtene[®] Balance is a mix of spray dried yogurt and inulin, a vegetable fructose polysaccharide derived from chicory which has been widely used for its gut microbiome health benefits, due to its prebiotic activity. It contains the key constituents of yogurt and therefore combines its benefits (skin firming, positive consumers perception...) with the prebiotic activity of inulin.

Thanks to this unique composition, Yogurtene[®] Balance is able to protect and rebalance the skin microflora towards one of a typically younger skin, while significantly improving the skin hydration.

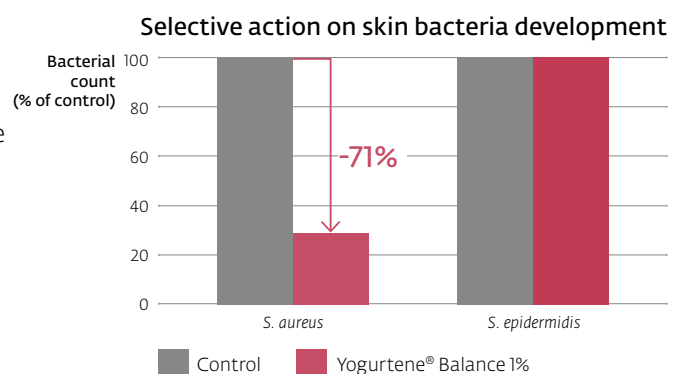


Helping “friendly” bacteria vs pathogenic ones (*in vitro*)

Standard cultures of *Staphylococcus aureus* and *Staphylococcus epidermidis* were used. The culture medium was a standard tryptone soya broth (TSB).

Yogurtene[®] Balance solution was autoclaved to produce a sterilised test solution. TSB medium and bacteria cultures with or without Yogurtene[®] Balance were mixed to obtain a co-culture broth and incubated over night. Serial dilutions of each co-culture broth were made and plated out onto agar. After 24 hours of incubation, colonies for each bacterial species were counted.

Results: Yogurtene[®] Balance is able to control the growth of *Staphylococcus aureus* while maintaining the population of *Staphylococcus epidermidis*. That way, it is able to improve the composition of skin microflora by decreasing its content in potential pathogens.



Efficacy

Rejuvenating skin microflora and improving skin hydration in a rinse-off (clinical test)

A single blind and placebo controlled study was performed on 22 volunteers (men and women, average age of 31 years old). For a full week before the analysis (from D-7 to D-1), all volunteers had to wash their forearms with a placebo soap to establish a same baseline on their skin. On D0, volunteers were then divided into 2 groups, which either had to use the placebo soap one more time, or the same bar soap containing Yogurtene® Balance at 1%.

Clinical measurements were run at D-1 as well as at D0, at 15 minutes, 3 hours and 6 hours after the soap application (T+15min, T+3h, T+6h), to characterise the volunteers' skin microbiota composition, and their skin hydration.

1. Towards a typically younger microbiota composition

A microbiome clinical study (16S rRNA) was performed by swabbing volunteers' forearms, extracting and sequencing the 16S rRNA gene (V3V4 region) of all the volunteers, at D-1, T+15min, T+3h and T+6h. 6.8 billions of DNA bases were analysed to compare the evolution of the microflora composition over time under the two conditions.

Wilcoxon test: # p<0.1, * p<0.05, *** p<0.001

		Typical abundance in young skin microbiome	Variation of relative abundance (Yogurtene® Balance vs placebo, ΔD-1)			Effect of Yogurtene® Balance
			T+15min	T+3h	T+6h	
Phylum	<i>Proteobacteria</i>	Low	-18% *	-26% *	-19% *	Downregulation
	<i>Actinobacteria</i>	High	+23% #	+24% *	+13%	Upregulation
Genus	<i>Cutibacterium</i>	High	+107% **	+122% **	+77% *	Upregulation
	<i>Enhydrobacter</i>	Low	-16%	-51%*	-30%	Downregulation

Results: Yogurtene® Balance impacts the skin microbiota composition on different phyla and genera, after only 15 minutes, with an effect which is conserved over time.

Yogurtene® Balance impacts two main phyla, by significantly decreasing *Proteobacteria* and increasing *Actinobacteria* relative abundances compared to placebo. It balances as well two main genera, by significantly increasing *Cutibacterium* and decreasing *Enhydrobacter* relative abundances compared to placebo.

Yogurtene® Balance improves the skin microbiota composition, by modifying it towards the typical composition of a young skin microbiota^{1,2}.

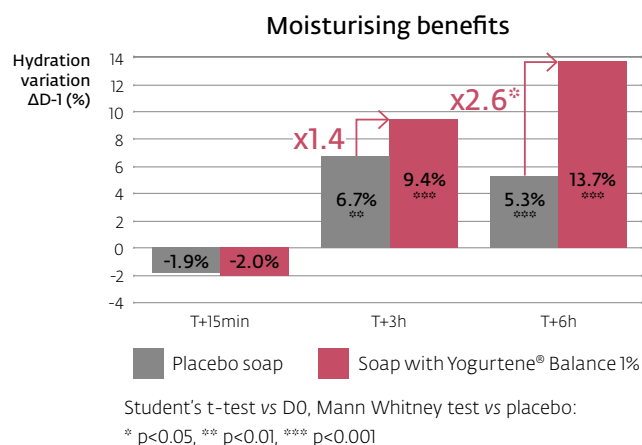
2. Long-term skin hydration benefits

Skin hydration was evaluated thanks to a Corneometer® (CM-825) at D-1, T+15min, T+3h and T+6h.

Results: The typical dehydration associated to the use of a bar soap is observed 15 minutes after its application.

After 3 hours and 6 hours, skin hydration is significantly increased by the soap containing Yogurtene® Balance, up to 2.6 times more than for the placebo soap.

Yogurtene® Balance improves the skin hydration, giving it back properties which make it closer to a younger skin, generally more hydrated than mature skin³.



Summary



Technical information

INCI:	Inulin (and) Yogurt Powder
Origin:	Biotechnology
Preservation:	Preservative free
Appearance:	White powder
Solubility:	Water dispersible
Dosage:	1-5%
Processing:	Add to water phase, not soluble in oil phase. Keep temperature below 50°C. Stir well to disperse, a suspending agent may be required.

Claims

Claims: Maintain skin health, restore microbiological balance of the skin, restore microbiota composition towards a typical younger composition, restore skin's natural equilibrium, hydrate skin in rinse-off applications.

Applications: Hydrating soaps, soaps for dry skin, rinse-off body washes, shampoos for dry scalp, hydrating creams, body lotions for dry skin, microbiome-friendly cosmetics, skin microflora protecting lotions.

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