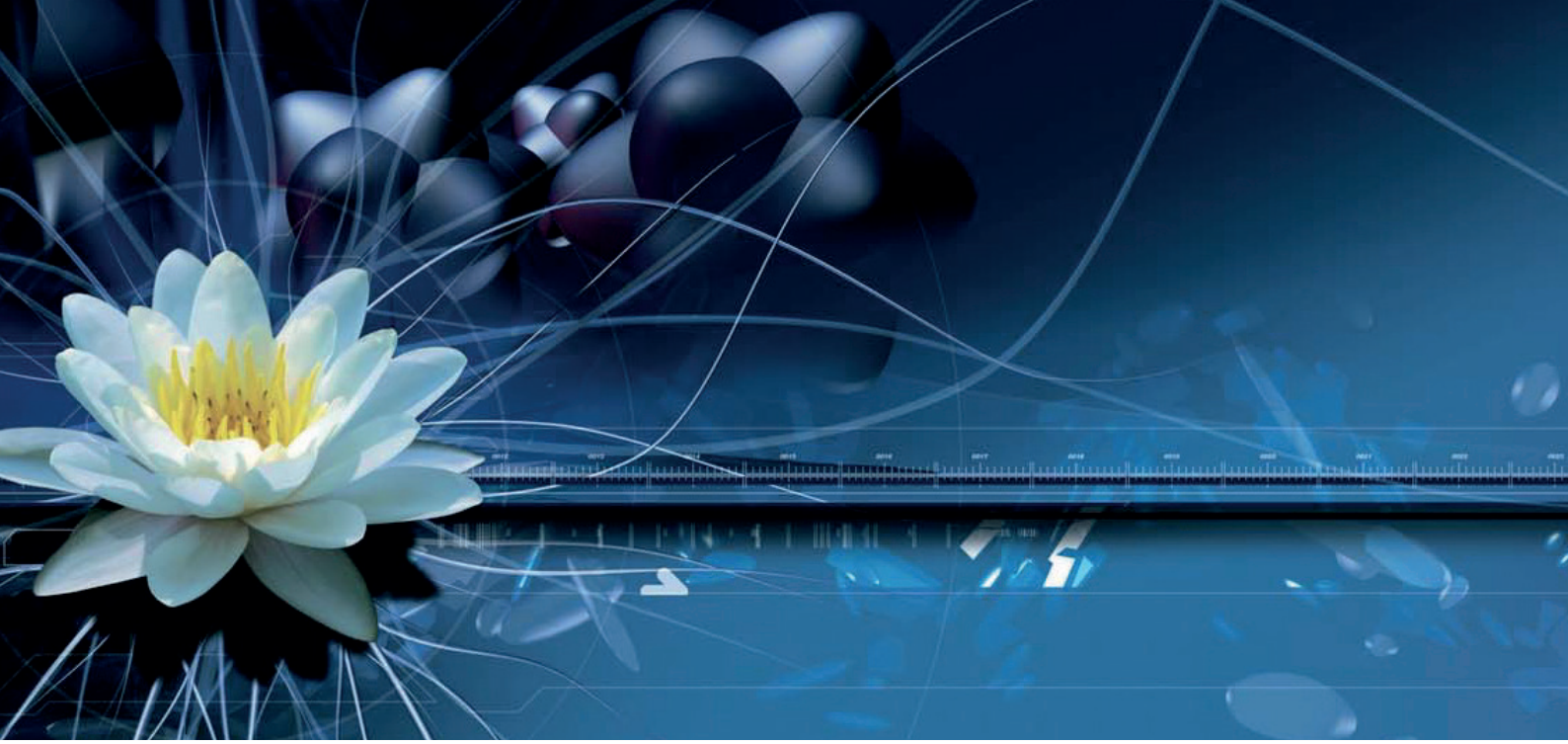

ZYMO CLEAR MD

For deep and delicate facial cleansing

About zymo line

Zymo Line is an extremely innovative line of active principles – in this case, enzymes of biotechnological origin. Enzymes are proteins found in all living organisms and have the specific role of speeding up biochemical reactions the speed of which would otherwise be incompatible with life. They are therefore essential for all physiological functions. The enzymes used by IRA are GMO free, come from selected microorganisms, are extremely efficient and especially safe for application in cosmetics. All products in the Zymo Line ensure no risk of viral infection or similar and contain no residue of antiparasites and pesticides.

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Your partner for excellence

Zymo Clear MD comprises **lipase** and **protease** combined with **maltodextrins**.

LIPASE and **PROTEASE**: these enzymes belong to the class of hydrolases. Hydrolases insert the components of a water molecule, H and OH, in a specific bond of the substrate to break the same bond. The class of hydrolases is extremely broad and includes important sub-classes, such as the lipases that hydrolyze the triglycerides in fatty acids and glycerol and the proteases that hydrolyze the peptide bonds of protein. The lipase and protease in Zymo Clear MD are able to catalyze breaking of most bonds in lipidic and proteinic molecules, reducing them to small easily soluble molecules and thereby facilitating the cleaning process. Furthermore, the keratolytic activity of the protease accelerates the natural process of exfoliation, favouring removal of dead cells on the surface of the skin.

MALTODEXTRINS: these are linear oligosaccharides obtained by hydrolysis of malt catalyzed by the β-glucosidase enzyme; they are therefore a biological product of vegetable origin. In addition to their excellent hydrating properties, typical of sugar molecules, maltodextrins are able to protect the active principle by increasing its stability. In particular, the enzymes associated with maltodextrins last for longer once incorporated in the finished cosmetic product, so their beneficial properties can be exploited at their very best.

Benefits

Adding Zymo Clear MD to detergents and make-up removers:

1. Facilitates cleaning
2. Minimizes need for other more aggressive ingredients
3. Favours sebaceous balance
4. Ensures faster exfoliation, making your skin feel brighter and smoother.

Applications

Zymo Clear MD is recommended for inclusion in all deep-cleansing skin products and, in particular, products for seborrhoeic or sensitive skin.

Recommended dose: 2 – 6 %. Any association with glycolic, azelaic or salicylic acid increases the product's efficiency.

Chemical-physi cal properties	
Features	**Standard values**
• Nature	• Powder
• Colour	• White
• Odour	• Absent
• Lipase activity	• 50 +/- 3 KLU/kg (KLU=Kilo Lipase Units)
• Protease activity	• 2 +/- 0.1 KPU/kg (KPU=Kilo Protease Units)
Solubility in:	
• Water	• Soluble
• Vegetable oils	• Insoluble
• Mineral oils	• Insoluble

Microbiological properties	
Features	**Standard values**
• TVC	• ≤ 100 CFU/g
• Fungi	• ≤ 50 CFU/g
• Pseudomonas aeruginosa	• None
• Staphylococcus aureus	• None
• Candida albicans	• None

Zymo Clear MD	
CODE 14120	
INCI NAME	
• Maltodextrin	> 50 %
• Lipase	< 0,1 %
• Protease	< 0.1 %
No preservatives	

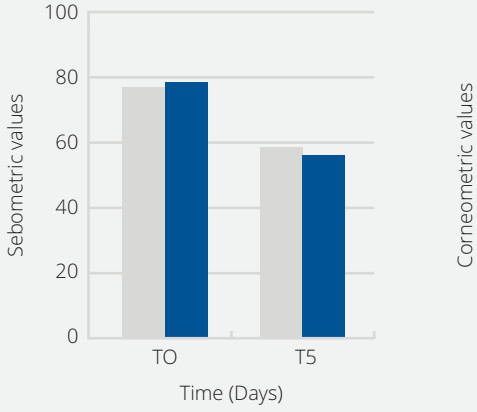
The evaluation procedure

The efficiency of Zymo Clear MD was valuated in vivo comparing the effect of a detergent formulation containing the Zymo Clear MD at 4 % with the effect of a basic formulation (in which Zymo Clear MD was replaced by water) on the following skin parameters:

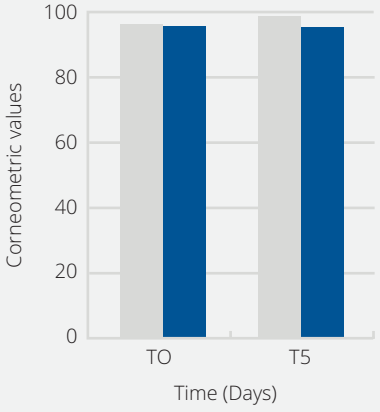
1. Quantity of sebum on the surface of the skin (cutaneous sebometry)
2. Content of water in the horny layer (cutaneous corneometry)
3. Skin pH

Volunteers used both products at the same time, each product applied to half of their face twice a day for five consecutive days. Valuation was carried out at the start (t0) and at the end (t5) of treatment (five days).

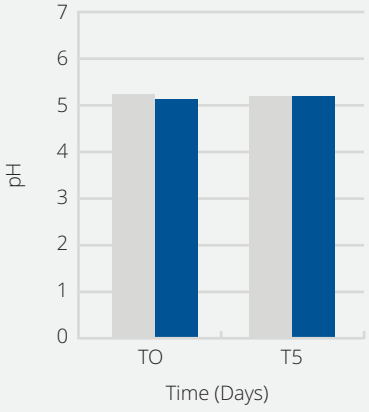
As shown in Graph 1, use of the test formulation (containing Zymo Clear MD) attenuated the reduction of cutaneous sebum, indicating the physiological lipidic barrier is better preserved. Furthermore, the basic formulation slightly decreased skin hydration, while the test formulation slightly increased it (Graph 2). Lastly, Graph 3 indicates how the skin pH went unchanged in both cases.



Graph 1: Cutaneous sebometry
(Instrument used:
Sebometer SM 410 Schwarzhaupt)



Graph 2: Cutaneous corneometry
(Instrument used: Corneometer
CM 820 Courage + Khazaka-Koln)



Graph 3: Skin pH
(Instrument used: Skin-pH-Meter pH
900 PC Courage + Khazaka-Koln)

Test formulation Base formulation

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