

# Tapping into texture to diversify your ONS offer



Adding expertise, delivering quality



# SUMMARY



## A growing market

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## ONS at the heart of the nutritional strategy

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For the most fragile people, the need for proteins must be met by a more adapted diet.

## Lactalis Ingredients solutions

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Pronativ® - Native Micellar Casein

Pronativ® - Native Whey Protein

## Pronativ®, a tool box to diversify your ONS offer

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High Protein High Calorie beverage

Protein UHT beverage

Protein pudding - Creamy texture

Protein pudding - Flan texture

# A growing market

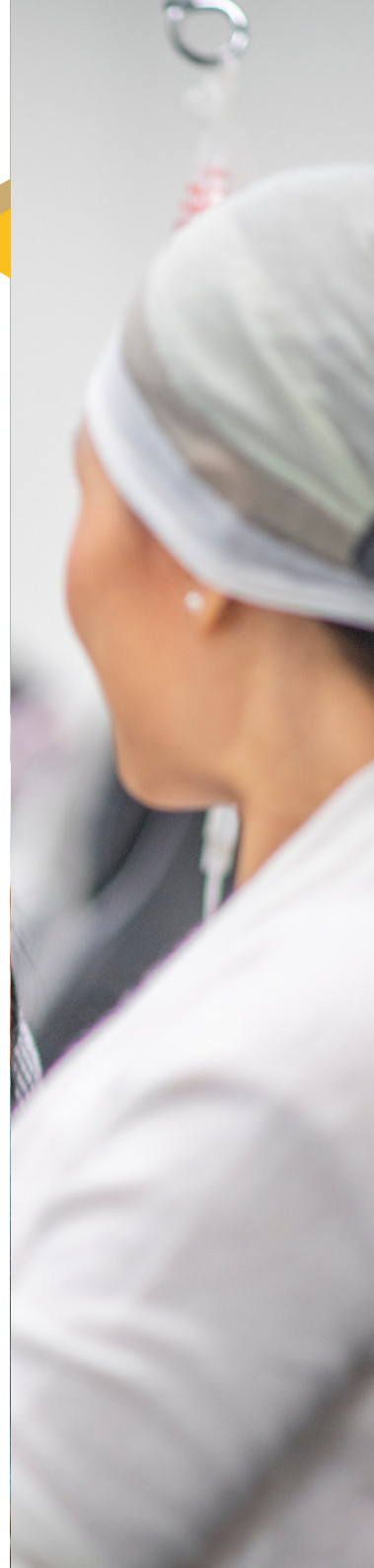


## **The clinical nutrition, a dynamic market**

Today the clinical nutrition market is a dynamic market estimated to be over \$20 billion. By 2027, it is expected to reach \$34 billion[1]. It includes enteral and parenteral nutrition. Global distribution is reasonably balanced with 35% of the market in Asia, 27% in North America and 25% in Europe[2]. There are different drivers such as the ageing population, the increase in metabolic diseases and the rise in prevalence of chronic diseases.

## **The senior population, the target**

The senior population represents an important target of this market. Between 2015 and 2050, it is estimated that the geriatric population (aged 60 and over) will have increased by 34% [2]. In order to prevent certain age-related diseases, such as sarcopenia (age-related muscle loss), diet plays a key role thanks to its protein intake.





# ONS at the heart of the nutritional strategy

For the most fragile people, such as the elderly or people with malnutrition problems, the need for proteins must be met by a more adapted diet. Indeed, the general diet does not provide all the necessary proteins and the use of Oral Nutritional Supplements (ONS) is a way to meet these needs.

Actually, proteins are necessary to prevent muscle loss starting around 40 years old. With anabolism (i.e. the mechanisms by which muscles get build-up from the ingested proteins) becoming less effective, the quality and quantity of proteins will be both key criteria for the proper physiological functioning of muscle. Compared to a young adult, the optimal amount of protein is increased for people over 65 years old. Furthermore, the quality of the protein is defined according to its digestibility, amino acid profile and leucine content (specific amino acid to initiate muscle anabolism).

## Protein requirements

For an active person aged 50 to 60, the requirements are similar to those of a healthy adult: 0.8 g/kg/day or roughly 60 g a day for a person weighing 70 kg. Requirements start to change once we reach 65 due to metabolic changes associated with ageing: protein requirements increase to 1-1.2g/kg/day or 80 g a day. Finally, for someone 80 or so, who is fragile, requirements are even higher and may reach 1.2-1.5g/kg/day or 100 g a day [3].

The ONS are key foods in the nutritional strategy: they represent almost 60% of the clinical nutrition market[4]. They exist in different forms: beverages, puddings, soups, biscuits, powders, etc. They are foods that present strong compliance issues.

## ONS definition

ONS are controlled food for special medical purposes, designed to meet specific nutritional needs like metabolic disorders or malnutrition.



# The challenges involved in manufacturing high protein products

ONS are subjected to high-heat treatments during processing (i.e UHT or sterilisation temperature) to ensure product safety and stability over time. However, these heat treatments can denature proteins, having consequences on the organoleptic properties of products. Yet taste, texture and format are factors that need to be worked on to promote ONS acceptability to patients.

When ONS are fortified with protein, these criteria need to be addressed even more carefully: the texture may be too thick for some product forms (puddings and drinks), and protein enrichment can lead to the

appearance of off-taste, like metal or bitterness. The stability over time of the product can also be reduced with the destabilization of the product structure. Therefore, shelf life can be shortened due to a thickening of the product over time, as well as a deposit of insoluble protein.

These problems obviously increase with higher protein levels. It seems therefore that producers are faced with a dilemma: either make high protein products that have unappealing taste and texture, or make less compact ONS, but more difficult for patients to finish because of the volume they have to ingest.



Taste, texture and format are factors that need to be worked on to promote ONS acceptability to patients.



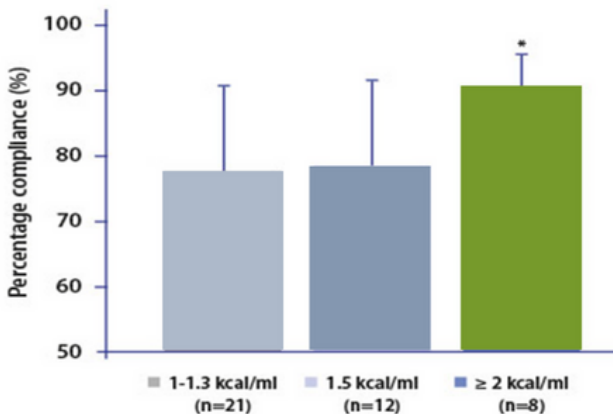


# Improving patient compliance

The overall compliance rate is 78% but can drop to 37%[5]. There are different obstacles to compliance. One of them is the size of the ONS. As shown in the graph below, energy density is positively associated with compliance to ONS, as the volume to be consumed is smaller and therefore easier to finish.

One of the other reasons for not taking ONS is the lassitude caused by the lack of variety[6], and also the organoleptic properties of the products. Offering good, palatable products with the right texture is thus a technological challenge but indispensable. Indeed eating food that tastes good is important to 67% of dependent elderly people[7].

**78%**  
overall compliance to ONS  
can drop to **37%** [5]



Graph 1: Percentage of compliance depending on the energy density of the CNO [5]

# Lactalis Ingredients solutions

At Lactalis Ingredients, the objective is to produce ingredients that will best meet the challenges of clinical nutrition: good products rich in protein thanks to the Pronativ® range.

This range is composed of native micellar casein (a slow digested protein, ideal for periods of fasting) and native whey protein (a fast digested protein, improving muscle function). Both are composed of a high content of essential amino acids, especially leucine.



## Both proteins have their own functionalities.

Pronativ® - Native Micellar Casein is adapted to the formulation of liquid products whereas Pronativ® - Native Whey Protein will be more adapted to the formulation of creamy to gelled products.

In addition, the combination of both can cover a large range of texture in between.

	Pronativ® - Native Micellar Casein	Pronativ® - Native Whey Protein
Heat resistance	<ul style="list-style-type: none"> <li>• Excellent heat stability (coagulation after 16 minutes)</li> <li>• UHT compatible</li> </ul>	<ul style="list-style-type: none"> <li>• Heat sensitive (coagulation after 1 minute)</li> <li>• No UHT compatible at neutral pH</li> </ul>
Texture	<ul style="list-style-type: none"> <li>• Low viscosity, similar to condensed milk</li> </ul>	<ul style="list-style-type: none"> <li>• Viscous, more set texture</li> <li>• Gelling power</li> </ul>

Tab 1: functionalities of Pronativ® - Native Proteins





# Pronativ®, a toolbox to diversify your ONS offer

Pronativ® range offers a toolbox to create a large variety of products including clean label recipes.



LIQUID BEVERAGES



PUDDINGS



DESSERT CREAMS



With Pronativ® create a large variety of products including clean label recipes.



# High Protein High Calorie Beverage

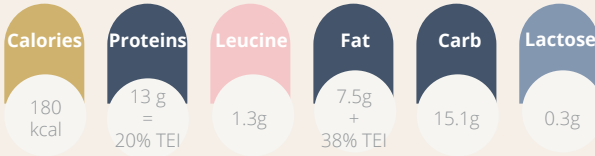
Made with Pronativ® – Native Micellar Casein, this high protein & high calorie drink, contributes to meet the daily dietary protein requirements, while diversifying the ONS offer.

It also provides a high nutrient intake (450kcal) in a small format (250 ml) and is perfect at the end of a meal or as a snack, especially in the evening.



32g  
of protein  
per 250 ml  
serving

### NUTRITIONAL FACTS PER 100 ML



### RECIPE PER 100 G

Water	64
Maltodextrin	10
<b>Pronativ® - Native Micellar Casein</b>	<b>14.2</b>
Sugar	4.5
Rapeseed oil	6.5
Vanilla aroma	0.1
Emulsifier	0.1



•Low and stable viscosity over time



High protein oral  
nutritional supplement





## High Protein UHT beverage

*This beverage combines the functional and nutritional benefits of native whey protein and native micellar casein to provide a high nutritional value and a high protein solution in an easy-to-consume 250ml bottle.*

This concept is innovative as the amount of whey proteins in the recipe is doubled: 40% compared to 20% in milk. The beverage is thus higher in leucine and a source of fast digested protein.

This concept can be used as a protein booster in a global nutritional strategy against sarcopenia. It is an additional protein intake, at the end of the meal, which will bring top quality proteins in a tasty and very enjoyable product.



18g  
of protein  
per 250 ml  
serving

### NUTRITIONAL FACTS PER 100 ML

Calories

51  
kcal

Proteins

7.2 g

Leucine

0.7g

Fat

1.1g

Carb

3.2g

Lactose

0.2g

### RECIPE PER 100 G

Water 87.55

**Pronativ® - Native Micellar Casein 5.50**

**Pronativ® 95 - Native Whey 2.85**

Sugar 3.0

Rapeseed/Sunflower oil 1.0

Praline aroma 0.10



- Non-acidic HP beverage = milky taste
- Contains 40% whey protein(x2 vs milk)



Protein booster





# High protein pudding

Creamy



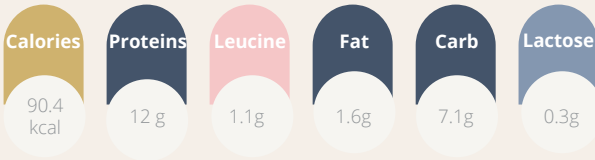
21g of protein per 180 g serving

Made with Pronativ® - Native Micellar Casein, this dessert provides a high protein intake in a small format (180g).

It has also a smooth and creamy mouthfeel texture obtained without adding any texturising agents.

This high-protein cream can be consumed at any time of the day, with a preference before night time to avoid muscle degradation during this long fasting period.

### NUTRITIONAL FACTS PER 100 ML



### RECIPE PER 100 G

Water	73.3
<b>Pronativ® - Native Micellar Casein</b>	<b>14.0</b>
Cream	5.0
Fructose	4.0
Rice Starch	3.0
Caramel Powder	0.35
Natural cream flavouring	0.65



- No use of texturizer
- Creamy texture



Late afternoon snack, to prevent night fasting





## High protein pudding

### Flan Texture

*Made with the combination of Pronativ® - Native Micellar Casein and Pronativ® - Native Whey Protein, this dessert contributes to meet the daily dietary protein requirements for adults in a small, easy-to-eat format (180g).*

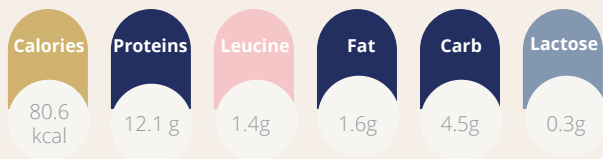
It has a solid texture obtained without any gelling agents that can be sliced with a spoon and is neither pasty nor sticky.

This dessert combines fast and slow-digestion proteins that might help to maintain a good muscle protein balance. It should be taken any time during the day, with a preference after physical exercise to take advantage of the metabolic window during which the muscle protein synthesis is enhanced.



21g  
of protein  
per 180 g  
serving

#### NUTRITIONAL FACTS PER 100 ML



#### RECIPE PER 100 G

Water	76.2
<b>Pronativ® - Native Micellar casein</b>	<b>7.7</b>
<b>Pronativ® 95 - Native Whey</b>	<b>6.1</b>
Cream	5.0
Fructose	4.0
Caramel Powder	0.35
Natural flavour	0.65



- No use of texturizer
- Flan-like texture (variety in product experience)



Lunch dessert to promote muscle synthesis





# Bibliography

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- [3] Bauer J, Biolo G, Cederholm T, Cesari M, Cruz-Jentoft AJ, Morley JE, et al. Evidence-based recommendations for optimal dietary protein intake in older people: a position paper from the PROT-AGE Study Group. *J Am Med Dir Assoc.* août 2013;14(8):542-59.
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- [5] Hubbard GP et al. (2012), A systematic review of compliance to oral nutritional supplements. *Clinical Nutrition*; 31: 293-312
- [6] Les compléments nutritionnels oraux. 10ème Journée Inter-CLANs du Limousin. 21 Novembre 2014
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