Lactium® is a milk protein hydrolysate which contains a bioactive peptide with soothing properties.

**Lactium® designed for consumers**
Lactium® is a natural product already used by numerous consumers wanting to regulate their chronic stress symptoms (weight gain/loss, sleep disorders...), to face very stressful periods of life (mood, tobacco detoxification...) or to optimize general well-being (immunity increase, energy and balance,...).

**Lactium® scientific evidence**
Lactium® has been clinically proven to decrease and regulate stress-related problems, without side effects or toxicity. All our clinical studies have been conducted according to Good Practice Guidelines in agreement with official ethical committees.

**Lactium® regulatory**
Lactium® possesses all the regulatory substantiation required by international teams.

**Lactium® specifications**
Lactium® meets all the technological requirements needed to be incorporated in dietary supplements and functional foods.

**Lactium® marketing potential**
Lactium® allows you to imagine a full spectrum of applications. By combining lactium® properties and market expectations, INGREDIA NUTRITIONNEL in partnership with its customers develops concepts and ideas for end products including claiming, sleep problems, tobacco detoxification, relaxation, concentration & memory.

**Guess who discovered lactium®?**
See p.4
**Consumer Testimonials**

*Proclaim study*

Patricia, working, 38 - "I sleep longer and the quality of sleep is better. I attach less importance to my daily problems".

Emeline, student, 24 - "I feel less nervous since I've been taking lactium® and I have more energy".

Emilie, student, 21 - "I feel less tense than usual, without any side effects".

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**Stress-Symptoms Improvement**

*(Proclaim* study - March 2003)*

Experimental protocol: The study was conducted in January-March 2003 on 63 women. It was based on a double-blind, placebo-controlled, cross-over design with a 150 mg/day dosage of the active. The whole sample of subjects was split into 2 groups. The first group received lactium® for 30 days. After a wash-out period of 3 weeks, they then received the placebo product for 30 days. The second group followed the same protocol by swapping the products. Using a questionnaire, the subjects reported on the improvements felt for each stress symptom. There were 8 categories for the types of symptoms.

<table>
<thead>
<tr>
<th>Stress-related symptoms improvement</th>
<th>lactium®/placebo improvement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensional state</td>
<td>+37%</td>
</tr>
<tr>
<td>Physical pain</td>
<td>+54%</td>
</tr>
<tr>
<td>Sleep</td>
<td>+21%</td>
</tr>
<tr>
<td>Memory &amp; Concentration</td>
<td>+46%</td>
</tr>
<tr>
<td>Mood</td>
<td>+74%</td>
</tr>
<tr>
<td>Relationship</td>
<td>+32%</td>
</tr>
<tr>
<td>Weight</td>
<td>+42%</td>
</tr>
<tr>
<td>Digestion</td>
<td>+25%</td>
</tr>
</tbody>
</table>

Statistical procedure: the evolution of the self-reported intensity of the symptom (between day 0 and day 30 of treatment period) was computed as following:

\[
\frac{(\text{lactium® intensity on day 0 - lactium® intensity on day 30 of the treatment period})}{(\text{placebo intensity on day 0 - intensity on day 30})} \times 100.
\]

lactium® shows a greater activity on the most acute symptoms even though it still has an activity on the moderate ones. We can observe a significant positive influence on stress symptoms in each of the 8 groups when lactium® is compared to placebo group.

Relationship +32%, Weight disorders +42%, Mood troubles +74%, Memory & Concentration difficulties +46%, Tensional state +37%, Physical pain +54%, Sleep troubles +21% and Digestive disorders +25%.

*Supported by INGREDIA NUTRITIONAL*
Clinically proven efficiency

Lactium® efficiency was tested in rats and confirmed through human clinical trials on 234 volunteers.

To complete the Proclaim study based on well-being improvement statements (see page 3), we have conducted studies measuring biological stress parameters: hormone assays (cortisol, ACTH), cardiovascular parameters (systolic blood pressure, diastolic blood pressure, heart rate).

Stress was induced by mental or physical tests. All clinical trials used randomized, double-blind, placebo-controlled design, were conducted on healthy volunteers and were made according to Good Clinical Practice Guidelines in agreement with official ethical committees.

The results were reported on Cattell and Spielberger questionnaires and can be summed-up according to this graph:

The graph clearly shows the positive effect of lactium® in comparison to placebo. The physiological efficiency of lactium® is proportional to subject stress level.

Lactium®
Natural, innovative & unique

The story of lactium® began with the observation of the calm state of a baby after drinking milk. Ingredia Nutritional’s scientists, in collaboration with research institutes, focused on identifying a relationship between milk consumption and any soothing effect resulting from this. Through many years of research, they succeeded in identifying a bio-peptide with natural relaxing properties present in a milk protein. Unfortunately, this active peptide can not be liberated by children or adults. Ingredia Nutritional has developed this unique product and now provides this food grade peptide by supplying lactium®.

To diet without stress level & boosting motivation.

Lactium® is safe based on acute & chronic toxicology studies. Pre-clinical & clinical evidence indicate that lactium® does not cause any drowsiness, habituation, memory loss, weight variation or addiction. The lactose content is much less than the intolerance threshold and lactium® is a milk hydrolysate which is the less allergenic form of milk proteins.

Lactium® is naturally derived from milk and contains no sugar, no fat and no preservatives. It is produced using an innovative purification process to enhance its functional properties.

Lactium® is covered by several international patents: France N° 95-30531, Japan N° 8.268903, US N° 6,336,486, Canada N° 2,257,818, China N° 200510035382.3...

Lactium® is a milk protein synthesized through a unique process: A milk protein is hydrolyzed by enzymes to generate bioactive peptides, which are then purified and formulated into an active ingredient.

Lactium® is represented as a 100% safe and effective ingredient for a wide range of functional foods. It is a food-grade peptide, the first milk-derived ingredient with proven anti-stress properties. The following concepts are scientifically confirmed at 150mg/day:

- Mood: +74%
- Relationship: +32%
- Weight disorders: +42%
- Memory loss: +30%
- Tensional state: +37%
- Physical pain: +54%
- Sleep troubles: +21%
- Digestive disorders: +25%

Have you guessed who discovered lactium®?

He did!

INGREDIA NUTRITIONAL (By INGREDIA®)

6 clinical studies
Clinically proven efficiency

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Have you guessed who discovered lactium®?

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lactium® possesses all the regulatory substantiation required by international authorities to be incorporated in dietary supplements and in health food. All useful documentation is available on customer’s request. Internationally patented, lactium® innovation has been awarded by professional industrials. lactium® is one of the few ingredients having obtained a health claim authorization from the authorities.

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lactium® is one of the few ingredients having obtained a health claim authorization from the authorities.

"... can moderate the tensional response to stress, in particular for hypersensitive persons."

lactium® an ingredient with a health claim authorization

lactium® is one of the few ingredients in France which has received a claim authorization from the French Safety and Control Administration (DGCCRF*) :  

"... can moderate the tensional response to stress, in particular for hypersensitive persons."

* DGCCRF : Direction Générale de la Concurrence, de la Consommation et de la Répression des Fraudes. France.

Food grade status validated by:
- the US Administration FDA : GRAS status and NDI status (F r 9242)
- the UE Administration through AFSSA (documentation available upon request)
lactium® does not require "Novel food" registration (documentation available upon request).

lactium® a patented and unique innovation

lactium® is covered by several international patents :
US patent N° 5,846,939
EU patent EP 071,910,81
Japan N° 8,268,010
lactium® a clean label ingredient

"Milk protein hydrolysate" for Europe and Asia
"Casein hydrolysate" for the US

lactium® a patented and unique innovation

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EU patent EP 071,910,81
Japan N° 8,268,010

lactium® possesses all the regulatory and scientific substantiation required to excel in today’s demanding marketplace.
lactium®
flexible in applications

lactium® has the following technical characteristics:
- Heat-stable
- No off-flavor in applications
- Water-soluble at recommended dosage
- pH stable (from 2 to 9)
- Several particle sizes available
  All batches are validated by both measuring biological activity (CDB test) and bioactive peptide content (HPLC dosage). INGREDIA is ISO 2001: 2000 certified
  and follows HACCP guidelines since 1992.

Several lactium® references are available depending on the matrix requirements;
  lactium® is perfectly adapted to:
  - Dietary supplements: capsules, soft-gels, tablets, sticks, gums,…
  - Functional foods: dairy products, fermented milk, biscuits, beverages, chocolate, cereal bars,…

For all these applications, INGREDIA NUTRITIONAL’s teams support its customers from product concepts, through development and industrialization and all the way to a successful end product launch.

INGREDIA NUTRITIONAL builds partnerships with its customers and provides a wide range of services to help you all along your product development.

INGREDIA NUTRITIONAL is a reliable partner from the first concept ideas to the launch of successful end products.

INGREDIA - More than a supplier : a partner

Satisfying customers requires more than one expertise: fortunately, INGREDIA NUTRITIONAL’s experts have many years of experience in working alongside with the food industry to develop successful products.

Technical Services:
- Technical support
  - Customized product co-development thanks to competent and reactive application teams
  - Availability of our semi-industrial pilot tool, technical guidance and advice for recipes
  - Customized matrix efficacy tests (analytical expertise, dosage,…)
  - Information about customs regulation and labeling recommendations

Consumers need to be orientated in the jungle of emerging health products. INGREDIA NUTRITIONAL helps you bring credibility to consumers.

Marketing Services:
- Positioning advice for end products using lactium®
  - Original ideas and concepts adapted to market expectations
  - Availability of our scientific documentation to build clear, consistent and positive messages to consumers
  - Co-branding program by using lactium® trademark and logo on your packaging, bringing credibility to your end products
  - Support during the claim regulation process to aid its validation by Authorities.

lactium®

Flexible in applications

INGREDIA NUTRITIONAL has chosen to evaluate the improvement in well-being during a 30 day period by limiting compulsive food intake and stress levels and boosting motivation.

In addition to biological studies based on physiological measurements (see page 4), INGREDIA NUTRITIONAL’s teams support its customers from product concepts, through development and industrialization and all the way to a successful end product launch.

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INGREDIA NUTRITIONAL has imagined some products incorporating lactium® based on proven clinical effects and on laboratory recipe trials. The following concepts are presented only as suggestions but many other matrices and processes have been validated by our teams.

Please do not hesitate to contact us. Our experts are committed to helping you develop new lactium® based concepts and customized food or dietary supplements.

**lactium® in functional foods:**

**lactium® in dietary supplements:**

---

**lactium®**

**To diet without bad mood**

lactium® supports you during your diet period by limiting compulsive food intake and minimizing stress level.

**lactium®**

**‘NO’ has never been so easy to say!**

Tobacco detoxification is a nerve-racking stage of life. lactium® will help you overcoming this hard event by limiting stress level & boosting motivation.

**lactium®**

**Refreshing nights make effective days**

Taken before bed time, lactium® becomes your ideal partner for resting nights. More relaxed and alert in the morning, you feel ready for a busy and challenging day.

**lactium®**

**And your tension melts away...**

When life pressure reaches your emotional balance, lactium® appears as an ideal solution to recover peace & wellness.

**lactium®**

**Clarify your mind in serenity**

lactium® has been clinically proven to help reducing memory & concentration troubles, especially during highly demanding periods.

**lactium®**

**The key solution for the success of your products.**