Treatment of aphthae, aphthous ulcers & mouth lesions
MOUTH PAIN RELIEF MARKET IN EUROPE

MARKET OVERVIEW & TRENDS

Mouth pain relief is a highly segmented market in Europe: there are many local competitors, more than 140 brands and the top 15 companies account for more than 80% of the market.

Mouth pain relief is a top 6 category in Europe and its weight has been increasing year on year:

- In France, it is a top 4 category in terms of market value and volume (out of 14): mouth pain relief is the fastest growing oral care category in value.
- In Germany, it is a top 2 category in terms of market value and volume (out of 14): mouth pain relief is the 4th fastest growing oral care category in value and the 2nd largest.
- In Italy, it is a top 5 category in terms of market value and volume (out of 14): mouth pain relief is the fastest growing oral care category in value.
- In Spain, it is a top 6 category, 5th in terms of market value and 6th in terms of market volume: mouth pain relief is the 2nd fastest growing oral care category (in volume) after dental sticks.

PRODUCT FORMATS

Gel, mouthwash, and spray are the most common product formats.
Each country is led by its local competitors.
11 local brands make the top 3 players in the 4 markets (Germany, France, Italy, Spain).

- **SPAIN**
  - Vinas- Aftex
  - Italfarmaco- Aloclair plus
  - Sunstar- Gum Aftamed

- **GERMANY**
  - Stada- Kamistad
  - Kreussler- Dynexan
  - Zeppenfeldt- Osanit

- **ITALY**
  - Recordati –Alovex protezione attiva
  - Bracco- Aftamed
  - Montefarmaco- Cikaflogo

- **FRANCE**
  - Boiron - Camilia
  - Pierre Fabre- Pansoral
  - Expanscience- Hyalugel
- **PRODUCT CLASSIFICATION**
  - Medical device
  - Drug

- **TARGET**
  - Adults only
  - Children only
  - Adults and children

- **CLAIMS**
  - Treatment of aftas, stomatitis, canker sores, dentures and lesions from braces
  - Immediately reduction of pain
  - Healing promotion
  - Inflammation inhibition
  - No burning sensation
  - No alcohol
  - Prevention of further irritation
  - Clinically proven
  - Safe product profile
**PRODUCT PROFILE**

<table>
<thead>
<tr>
<th>Description</th>
<th>Spray for mouth ulcers, aphthous ulcer and oral lesions (BMG0906)</th>
</tr>
</thead>
</table>
| Regulatory status | EU : Medical Device (Class IIA)  
USA : OTC Medical Device (510k) |
<p>| Dosage | Spray three times, 2/3 applications per day |
| Principle ingredients | Zinc, Taurine and PVP |
| Indication | Relief of pain caused by aphthous mouth ulcers and other minor oral lesions with local and mechanical action |
| Contents | 15ml amber glass bottle with nozzle |</p>
<table>
<thead>
<tr>
<th><strong>PRODUCT PROFILE</strong></th>
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| **Regulatory status** | EU : Medical Device (Class IIA)  
USA : OTC Medical Device (510K) |
| **Dosage**          | 2/3 application per day, or as needed |
| **Principle ingredients** | Zinc Gluconate Taurine & PVP |
| **Indication**      | Viscous gel which provides pain relief by adhering to the mucosal surface of the mouth and protecting the nerve endings, soothing the mouth lesions. |
| **Contents**        | 8ml tube (sale pack), 2ml sachet (sample pack) |
**PRODUCT PROFILE**

<table>
<thead>
<tr>
<th>Description</th>
<th>Oral rinse for mouth ulcers, aphthous ulcers and oral lesions (BMG0903)</th>
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</table>
| Regulatory status | EU: Medical Device (Class IIA)  
USA : OTC Medical Device (510k) |
| Dosage | 10ml 2 / 3 times per day, or as needed |
| Principle ingredients | Zinc Gluconate, Taurine & PVP |
| Indication | Helps in the treatment of aphthae, irritations and lesions of the oral mucosa: it forms a barrier that adheres to the oral mucosa and promotes healing |
| Contents | 120ml bottle (sale pack), 10ml sachet (sample pack) |
BMG products fulfills this need by employing a proprietary preservative system based on formulations utilizing zinc gluconate, a mineral-salt and Taurine, an amino sulfonic acid. When combined together they form a bioactive zinc-Taurine complex under physiological conditions. The complex provides excellent bacteriostatic qualities without the cyto-toxicity seen in other preservative systems. In addition to its preservative qualities, zinc-Taurine complexes are effective in addressing mineral deficiency and inflammatory processes associated with oral discomfort and pain. Both zinc and Taurine exhibit well known anti-inflammatory/free-radical savaging qualities and the ability to downregulate pro-inflammatory cytokines.

One of the most important applications of PVP, either used alone or in combination with other polymers, is the coating or encapsulation of tissues, organs or implants. This is because PVP provides a film that is permeable to water and solutes and, at the same time, protects tissue or implant surfaces from insults or other damages like those due to bacterial colonization.
THE EFFECT OF PROTECTIVE GELS ON MUCOSITIS: A PILOT STUDY, UNIVERSITY of CATANIA, ITALY

- 60 patients
- Five groups, treated with:
  - GROUP A: 100% pure Vitamin E
  - GROUP B: Gel containing an Aloe vera extract
  - GROUP C: no treatment /control group
  - GROUP D: BMG0902 gel
  - GROUP E: Vitamin A + other polymers
- 4 applications per day
- Evaluation of:
  - Complete healing
  - Lesion present, but asymptomatic
  - Halving of the symptoms
  - Persistence if signs and symptoms
  - Side effects
Complete healing

- Group A: 85%
- Group B: 80%
- Group C: 40%
- Group D: 90%
- Group E: 20%
PVP, TAURINE, ZINC GLUCONATE GEL, SPRAY AND MOUTHWASH EFFICACY IN ORAL LESIONS TREATMENT, UNIVERSITY of MILAN & BRESCIA, ITALY: poster presented at the IADR Helsinki, September 12-15, 2012

- 80 patients
- Four groups, treated with:
  - GROUP A: Aftacure gel
  - GROUP B: Aftacure spray
  - GROUP C: Aftacure rinse
  - GROUP D: no treatment
- Control visits at T1 (day 3) and T2 (day 7), after traumatic factor removal (T0)
- Two assessments:
  - VAS scale by the patients to evaluate pain intensity
  - VAS scale by a third operator to register discolorations, side-effects, lesions dimensions
RESULTS: data were statistically analyzed. Group A had a mean VAS value 1.85 point lower and an healing process 2.04 days on average faster than control group D; group B had a mean VAS value 1.94 points lower and an healing process 1.70 days on average faster than control group D; group C had a mean VAS value 1.69 points lower and an healing process 1.87 days on average faster than control group D. There were no side effects or teeth discoloration.
CONCLUSIONS: All these products were effective on pain reduction and healing fastening of oral ulcers and lesions, after traumatic agent removal. The absence of side effects contributed to the optimal patient’s compliance to the assigned therapy.
EFFECTS OF GELX IN HYDROCHLORIDRIC ACID –INDUCED DAMAGE ON MICE SKIN - DMU, UNIVERSITY of MILAN, ITALY

- Animal species: white mice
- Age: 8 weeks
- Nr: 12
- Age: 8 weeks

Different groups of mice randomly formed
- HCL solution
- HCL solution + GelX OTC placebo
- HCL solution + GelX OTC
- HCL solution + Clobesol
IN VITRO EXPERIMENTAL RESULTS

RESULTS: GelX OTC placebo & GelX OTC act as mechanical intermediary in protection against HCL-ulcers formation in mice skin; both demonstrated a film-forming activity that protects the skin from HCL-damage.

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<tr>
<th></th>
<th>HCL solution</th>
<th>GelX OTC placebo</th>
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<th>Clobesol</th>
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<tbody>
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<td>GROUP 1</td>
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<td>GROUP 2</td>
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<td>GROUP 4</td>
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