A powerful new combination that works more efficiently against mastitis
Mastitis remains the key challenge for successful dairy production and affects many issues beyond its pathogenic causes:

**Mastitis is an economic issue**
- Mastitis is the most prevalent disease facing the worldwide dairy industry
- Infection rates are as high as 50%
- Costs are as high as €170 per case, mostly from production loss and discarded milk

**Mastitis is a pathogen issue**
- It involves a variety of pathogens and epidemiological models; environmental, contagious and the two combined
- This complicates pathogen identification, treatment and control

**Mastitis is a quality issue**
- With significant adverse effects on milk quality and consequences for both processing efficiency and human health

**Mastitis is a welfare issue**
- Mastitis is a key contributor to high culling rates in dairy cattle
- Only recently have we begun to understand that higher levels and longer periods of pain are involved, even beyond the clinical event

**Mastitis is a therapy issue**
- Thanks to anti-infective therapy, the high incidence and severity of clinical mastitis has been prevented from rising even further over the past 35 years
- However, despite both anti-infective therapy and implementation of hygiene control methods throughout the milking process to reduce exposure to mastitis, a very high number of cases still occur
- Efficient antibiotic treatment during lactation is more than ever required, whether we like it or not

**Mastitis is an issue of job satisfaction**
- Mastitis is not just a threat to profitability but causes great frustration
- Mastitis is a daily challenge to the motivation and satisfaction of all those involved in dairy production, vets and farmers alike

**Mastitis is not an isolated issue limited to veterinary medicine**
- Antibiotic treatment of animal diseases such as mastitis are increasingly considered in the context of a larger health picture which includes questions of priority between animal and human medicine that can be challenging for dairy production

The availability of new therapeutic compounds for the specific treatment of mastitis has been very limited in the last 15 years

In the light of all these issues, we have to find intelligent new ways to exploit the resources available to us in order to continue successfully meeting the challenge of mastitis.
Use of antibiotic combinations is an established principle in the treatment of bacterial infections:

- To extend the spectrum of anti-bacterial activity
- To achieve a synergistic anti-microbial effect
- To prevent or minimize the emergence of resistance

For mastitis, effective antibiotic combinations need to achieve:

- A broad spectrum of activity
- High efficacy against defined target pathogen populations
- Close adherence to principles of prudence for prevention or minimization of resistance emergence

The requirement for information and documentation for new products concerning efficacy and safety in animals, users, consumers and the environment has increased substantially over the past decade.

For new antibiotic combination products aiming for marketing authorization today, this presents a particular challenge because of the need to evaluate the characteristically synergistic action which is their key rationale.

Despite this challenge, the promise of specific beneficial interactions between targeted anti-bacterial components working together in combination has inspired Boehringer Ingelheim to develop Ubrolexin®, a combination product offering a new standard of quality in mastitis therapy.
Ubrolexin® - the power of synergy

Ubrolexin® contains two targeted antibiotics with complementary action

Ubrolexin® delivers enhanced bactericidal activity through a specially designed combination of two complementary targeted antibiotics working in synergy.

Ubrolexin® is registered and approved to the latest European regulatory guidelines.

Ubrolexin® marks a new quality of broad spectrum mastitis treatment, offering uncompromised efficacy and simplicity of use for the routine treatment of clinical mastitis.

Ubrolexin® contains two targeted antibiotics with complementary action:

- **Cefalexin**
  - 1st generation cephalosporin
  - Mainly active on Gram+
  - Bactericidal activity: inhibits bacterial cell wall synthesis

- **Kanamycin**
  - Aminoglycoside
  - Active on Gram- and S. aureus
  - Bactericidal activity: inhibits bacterial protein synthesis

Complementary activity:
- Different classes
- Different modes of action
- Different pathogen targets

Synergy
Ubrolexin® exhibits synergistic activity against key mastitis pathogens¹

- Synergy is defined as a positive interaction of two or more agents which results in a combined effect significantly greater than the sum of their normal individual effects
- Synergy can be measured by an in-vitro investigation of killing curves which offer dynamic information about the bactericidal activity of an antibiotic combination over time

Ubrolexin® offers excellent cure rates in field studies²

Bacteriological cure rates achieved with Ubrolexin® on key bacterial strains isolated
(combined results from field studies in UK, France and Germany, 2004/05)

Quarters infected with any pathogen are cured by Ubrolexin® without re-infection²

Rate of quarters free of any mastitis pathogen after treatment
(based on milk control sample analysis within 4 weeks of treatment)

Ubrolexin® performed identically to a 4th generation cephalosporin and outperformed a 3rd generation cephalosporin
Ubrolexin® - rapid kill for optimal impact

Time-kill curve of Ubrolexin® against major pathogens (data generated in milk using the lowest bactericidal concentrations) and antibiotic concentrations in milk (μg/ml) after administration of one Ubrolexin® injector

Through its synergistic activity, Ubrolexin® kills major pathogens in less than 12 hours.

Ubrolexin® - clever and convenient

Not only does Ubrolexin® kill pathogens very rapidly, but it also suppresses the growth of bacteria at concentrations below the MIC, a phenomenon known and described in pharmacology as ‘Post Antibiotic Effect (PAE)’. As a result of these properties, Ubrolexin® requires only two administrations at a 24-hour interval to deliver the right dose for maximum efficacy.

References
Ubrokealin® - the power of synergy

- Target-spectrum antibiotics working in synergy to offer uncompromised and enhanced broad spectrum activity
- Suitable for routine use in mastitis treatment
- Fast kill for highest efficacy and protection
- Easy and safe to use
- Approved to the latest European standards

Time for an intelligent solution