

# THE ANIMAL HEALTH INDUSTRY'S CONTRIBUTION TO THE REDUCTION OF BOVINE MASTITIS AND MAINTENANCE OF HIGH QUALITY MILK PRODUCTS

## Factsheet



Milk and dairy products are essential sources of food for the majority of the global population and global demand keeps growing. To keep pace with this growing demand, to maintain high levels of animal health and welfare and quality of milk and dairy products, and to keep dairy farming profitable, the animal health industry has developed products to treat bovine mastitis, a disease with a substantial negative impact on these important requirements.

### Characteristics

Mastitis is the inflammatory reaction after an intra-mammary infection (IMI), caused by bacteria invading the mammary gland via the teat orifice. Mastitis manifests itself in two forms:

- subclinical mastitis, without visual symptoms
- clinical mastitis, with local symptoms in the udder, like swelling, heat, redness, hardness or pain, and/or systemic symptoms.

A wide range of bacteria can cause mastitis. Among the most common are *Streptococcus uberis*, *Streptococcus dyslactiae* and *Streptococcus agalactiae*, but also pathogens with direct relevance for human health like *Staphylococcus aureus* and *Escherichia coli* can cause mastitis.

### Societal impact

- Animal health and welfare

Mastitis is one of the most common and detrimental diseases cows can have. The symptoms vary from very mild for subclinical mastitis, to moderate for clinical mastitis and to very severe/fatal for acute clinical mastitis.

Studies on mastitis estimate the prevalence of clinical mastitis to be between 47-71% on an annual cow basis. On average the prevalence of subclinical mastitis is 3-4% of the udder quarters on a farm.

Somatic cell counts (SCC) have long been used as a way of measuring milk quality. Cells in milk occur naturally and the count in milk from a healthy udder of a cow should be less than 100,000 cells per ml. The number of somatic cells increases in response to infections by pathogenic bacteria causing mastitis.

The challenge for farmers and veterinarians is to notice (subclinical) mastitis as quickly and adequately as possible, thereby reducing the impact on animal health and welfare.

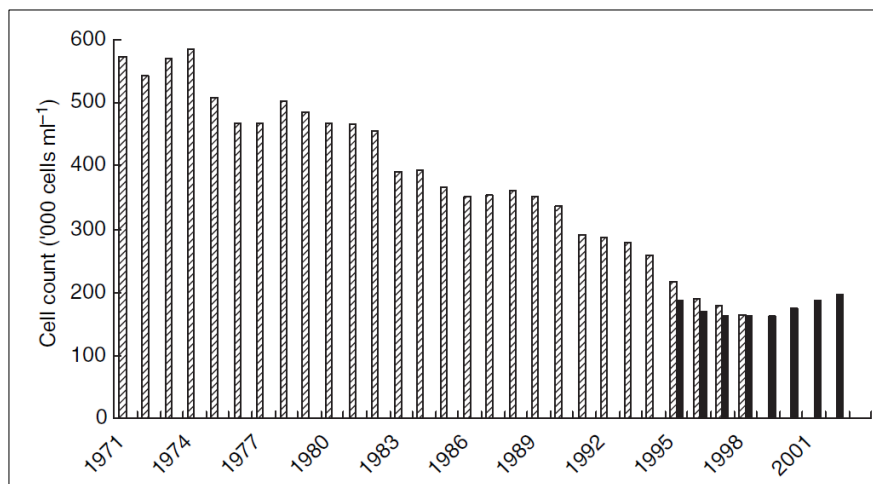
- Economic impact

According to K. Huijps et al. total economic losses (clinical and subclinical cases) varied from €114/cow per year on a farm with a Bulk Tank Somatic Cell Count (BTSCC) <100,000 cells/ml to €182/cow per year on a farm with a BTSCC >400,000 cells/ml. Production losses accounted for 36% of the economic losses of clinical mastitis, accounted for 100% for subclinical mastitis, and for 71% of

the total economic losses for mastitis. Culling of cows with mastitis was the other factor accounting for a large part of the total economic losses (16%).

- Quality of milk and dairy products

Mastitis may lead to abnormalities in milk, e.g. watery appearance, flakes, clots, or pus. The dairy industry pays a premium for milk with low SSCs. EU regulation EC/853/2004 lays down specific hygiene rules for food stuffs and requires SSC for raw milk to be below



specified limits. The impact of the availability (since the early 1970s) and the success of the mastitis treatment and its positive impact on milk quality is illustrated by this graph<sup>1</sup>.

### Mastitis prevention, control and treatment options

Mastitis prevention starts with proper milking hygiene and adequate and well maintained milking equipment.

Controlling the infection is improved through proper milking hygiene and good milking equipment as well. Additionally, infection control also includes monitoring and record-keeping as well as culling of chronically-infected cows.

Traditionally treatment options for mastitis have been limited to antibiotics, which are used to treat clinical and subclinical mastitis and to prevent infection with mastitis pathogens during the dry period, a major risk-period for infection. For decades the animal health industry has made significant investments in mastitis vaccine R&D, but the development of adequate vaccines is impeded by the wide variety of mastitis pathogens and the ability of the cow to develop and maintain a life-long immunity against these pathogens. Recently a vaccine to prevent mastitis has become available; other vaccines are still in development. Field experience needs to be gathered to qualify and quantify the contribution of vaccines to mastitis control in general.

### Useful links:

- DairyCo information on mastitis  
<http://www.dairyco.org.uk/technical-information/animal-health-welfare/mastitis/>
- Regulation (EC) No 853/2004 OF The European Parliament and of the Council of 29 April 2004, laying down specific hygiene rules for on the hygiene of foodstuffs  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004R0853:en:NOT>

<sup>1</sup> J.E. Hillerton and E.A. Berry, Journal of Applied Microbiology 2005, 98, 1250–1255