

# Is Orbeseal® the answer to mastitis on organic farms

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# Mastitis

- 52% of coliform mastitis (Bradley, 2000)
- 61% of gram-negative IMI (Todhunter, 1991)
- 56% of clinical *S. uberis*-mastitis
- 33% of *S. dysgalactiae* – mastitis (Bradley, 2001)

**... Have their origin in the dry period**

# Drying off

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- **50% of cows have open teat-canals one week after drying off (Dingwell, 2001)**
- **23% of cows have open teat-canals six weeks after drying off (Dingwell, 2001)**
- **The hazard of quarters closing if milk production on the day prior to drying-off was >21 kg 1.8-times less. (Dingwell 2003)**

# Intramammary antibiotic dry cow therapy

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- **Dry cow treatment with antibiotics prevents new infections with major pathogens during the dry period in approximately 5% to 10% of cows (Schukken et al., 1993)**
- **Annual use of 7 tons of pure antibiotic active ingredient for prophylaxis and treatment of udder diseases in Switzerland (Schällibaum, 2002)**
- **Regulations for organic farming: favour the use of complementary medicine, use of antibiotics only with restrictions**

# Teat-sealer

- application intramammary
- forms a physical barrier in the teat end during the dry period
- consists of 65% bismuth subnitrate (2.6g)
- is milked out after calving



# Teat-sealer studies

- Teat-sealer against untreated control (Berry and Hillerton, 2002)
- Teat-sealer against antibiotic dry cow therapy (Woolford et al., 1998)
- Teat-sealer against antibiotic dry cow therapy (Huxley et al., 2002)
- Teat-sealer in combination with long acting antibiotics against antibiotic dry cow therapy (Godden et al., 2003)

conclusions

Less new  
IMI at  
calving

# Bismuth

## Bismut

$^{83}\text{Bi}$

engl. bismuth; alter Name: Wismut ("weiße Masse")



relat. Atommasse:	208,98038
Ordnungszahl:	83
Schmelzpunkt:	271,3 °C
Siedepunkt:	1560 °C
Oxidationszahlen:	5, 3
Dichte:	9,79 g/cm <sup>3</sup>
Härte (Mohs):	2,5
Elektronegativität:	2,02 (Pauling)
Atomradius:	154,5 pm
Elektronenkonfig.:	[Xe]4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>3</sup>
natürl. Häufigkeit:	Bi-209 100%

Das Schwermetall Bismut ist relativ weich und besitzt eine niedrige Schmelztemperatur

# Use of bismuth in human medicine

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- **gastrointestinal disorders**
- **Peptic ulcer (Topfmeier et al., 1991)**
- **Infections by Helicobacter pylori (Berstad et al, 1996)**
- **Epistaxis (Corbridge et al., 1995)**

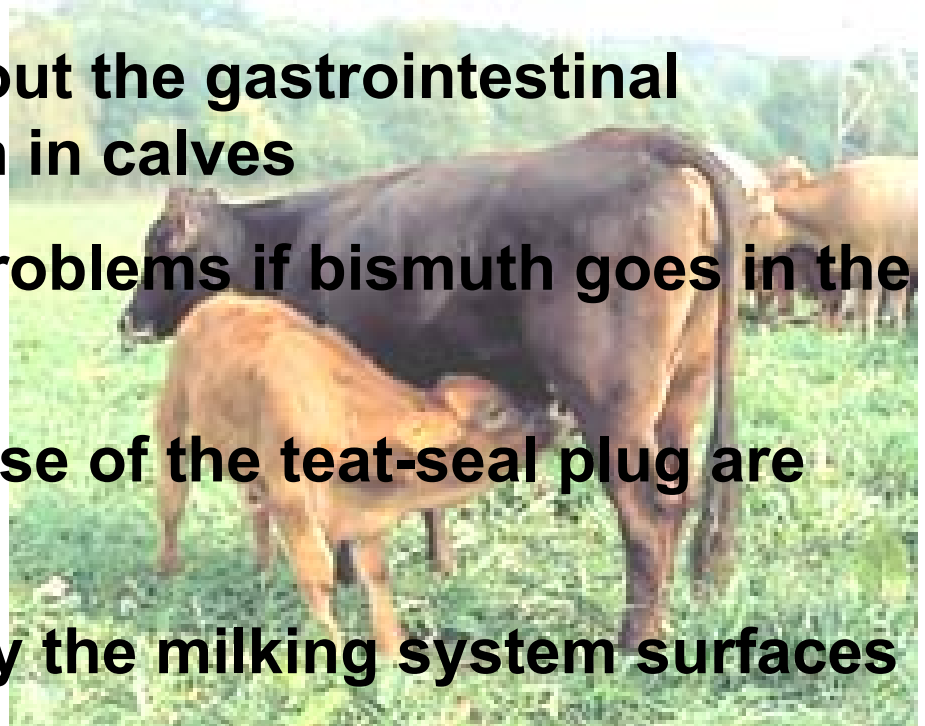
# Side-effects of bismuth in human medicine

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- **nephropathy, encephalopathy, osteoarthropathy, gingivitis, stomatitis and colitis (Slikkerveer and de Wolf, 1989)**
- **Methemoglobinemia (Faivre et al., 1976)**
- **Between 1974 and 1976 more than 100 cases of iatrogenic encephalopathy due to ingestion of bismuth. They have not been contingent on the dose rate (Loiseau et al., 1976)**
- **in rats digestive absorption is enhanced by thiol substances, particularly cysteine (Chaleil et al., 1980)**

# Orbeseal® in organic farming

- Calving happens often without surveillance
- Calf suckles colostrum containing traces of bismuth
- No studies known about the gastrointestinal absorption of bismuth in calves
- Possible ecological problems if bismuth goes in the liquid manure
- Leaky sealing and loose of the teat-seal plug are described in practice
- if it enters accidentally the milking system surfaces will be clotted



# Conclusion

- more studies concerning the application and the effects of bismuth on humans, animals and the environment
- The use of veterinary products affects the credibility of organic livestock production → organic farming needs not every veterinary medicinal product used in conventional farming





**Thank you for your attention**