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## JOINT HEALTH

### Animal Health

Joint inflammation and lying injuries (decubitus) with hair loss (alopecia) and skin changes mostly occur on hock joints. Certain risk factors are conducive to the formation of these diseases, ultimately resulting from excessive pressure on the skin.

While lying, the cow's skin on the lower part of her body is exposed to considerable pressure from its own body weight. This significantly disturbs the blood circulation to the skin zones between hard bone tissue and the hard lying surface. Wherever that softness can distribute the pressure during lying to a larger bearing area, the skin tissue is more adequately supplied with nutrients.

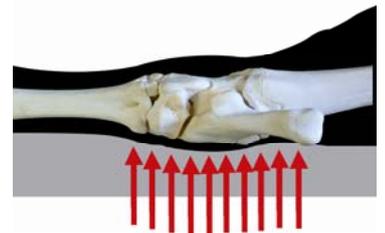
#### Anatomy

The softness and elasticity of subcutaneous adipose tissue and especially the muscle tissue maintain the blood supply to the skin, despite temporary pressure on the body surface. If the pressure is too high or lasts too long, damage to the roots of the hair or to the skin can be expected. Skin agnosiae are most likely to occur on those spots where only skin covers the bone tissue, e.g. on the hock joint.

Hock joint on hard lying surface: the weight burden on one spot



Hock joint on soft lying surface: the weight is distributed to a larger surface



### Risk factors

The following risk factors lead to predamaging the skin and facilitate joint inflammation and injuries from lying:

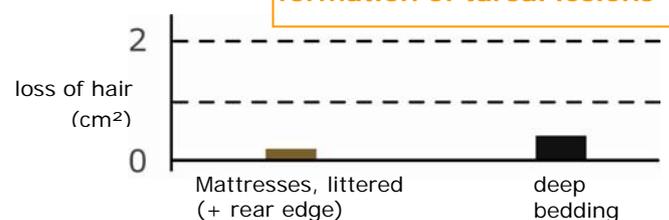
- The blood and nutrient supply to the skin is hindered by the pressure. This lowers the metabolism, which results in a reduction of the protection provided by the skin.
- Hair loss is caused by a disturbed metabolism in its roots. Without the hair, the skin cannot defend itself against environmental effects.
- Moisture (from milk, urine and faeces) softens the skin. In this type of swollen skin, bacteria can enter more easily and cause inflammations.
- Lying areas with poor hygiene through faeces and liquid accumulation, in which high concentrations of bacteria are present, are a dangerous source of infection.
- Non-ruminant appropriate feed intake with an insufficient supply of vitamins, minerals and trace elements.

### What can the farmer do?

- Establish lying areas, where the pressure from body weight is dispersed over a surface which is as large as possible.
- Provide dry lying areas with soft, skin-friendly bedding material, which absorbs moisture.
- Provide clean lying areas
- Optimal feeding (ruminant appropriate)

-> best lying comfort for the natural lying behaviour of the cow (about 12 hours per day in separate phases, each lasting from about 60 to 90 minutes)

#### Littering cubicles



putting bedding material on mattresses or similar coverings prevents the formation of tarsal lesions

Source: Research results by Mowbray et al, 2003, University of British Columbia, Canada