

# Development of an Esophageal Tube Feeder for use in Calves

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## Introduction

Disease and mortality in neonatal calves are often the consequences of insufficient passive immunization due to inadequate colostrum management. Disease prevalence and mortality can be reduced if colostrum is administered by an esophageal tube feeder a few hours after calving.

The Danish Agricultural Advisory Centre recommends that calves expected to have insufficient colostrum intake, be fed a sufficient volume of high quality colostrum by esophageal tube feeder.

To improve efficiency of esophageal tube feeding and increase calf welfare and performance, an interdisciplinary project was initiated aimed at development of a user-friendly, hygienic esophageal tube feeder for use in calves.

## Materials and Methods

Special demands of the product included anatomical, physiological and hygienic aspects, calf health and functional practicalities. A system with disposable plastic bags instead of reusable plastic containers was chosen. By combining disposable plastic bags with a reusable strap-on carry-cover, a series of fundamental advantages were achieved. Prototypes were tested in several commercial dairies. Experiences collected by

interviewing the users of the prototypes were summarized and incorporated into the new concept.

## Results

*Post mortem* findings in 11 tube-fed and two control calves included minor acute subepithelial bleeding on the lateral surface of the tongue and in the cervical part of the esophagus. The bleeding of focal or petechial character and was observed (in less extent) in control calves as well. The esophageal epithelium was intact. Four calves that were fed once by esophageal tube feeder immediately after birth were necropsied between eight and 14 days post partum. None of those calves showed lesions that could be ascribed to tube feeding.

Several tube fed calves had mild aspiration pneumonia. Consequently, the tube-end radius was made larger and the on/off system for the milk flow was functionally improved, so that accidents with milk or other fluids in the airways could more easily be prevented.

## Conclusions

A number of advances regarding hygiene and functionality were obtained. As these aspects are important for users, they could lead to a wider use of esophageal tube feeding to neonatal calves and thereby improve calf welfare and performance.