7.2 Vaccination

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Modified live vaccines (MLV)

Live vaccines contain viable virus which, however, is modified in such a way as not to trigger disease. MLVs are convenient, as two applications within a period of several weeks are sufficient for a relatively long-lasting protection. They cause a comprehensive immune response with good cross reactivity for different BVDV strains. The protection of foetus (of a mother vaccinated with MLV) is adequate provided the immunisation was done carefully, it is, however not 100% efficient. MLVs also have serious disadvantages. If applied to pregnant cows, they may induce an abortion or may infect the foetus transplacentally with consequences similar to that following infection with a wild-type virus. At least, cp MLVs will not generate any PI animals, as only ncp strains would be able to do that. In PI animals the vaccination can induce Mucosal Disease (in this case the vaccination acts like a super infection with cp BVDV). The presence of maternal antibodies influences the generation of a viable immune response. A further disadvantage is their immune suppressive effect.

Killed vaccines

Inactivated (killed) vaccines contain inactivated virus or parts thereof. They are considerably safer than MLVs. Additionally, inactivated vaccines are less prone to contamination than MLVs. On the other hand, their immunizing effect is lower. An adjuvant is normally added to inactivated vaccines which ensures that the small quantity of antigenic material is optimally presented to the immune system. These days aluminium hydroxide is largely used. Another disadvantage of inactivated vaccines is their short duration which requires regular follow-up vaccinations. Table: Properties of MLV & killed vaccines

	modified live vaccines (MLV)	killed vaccines
immune response	good, balanced	weak cross reactivity
goodgoodduration of protection	long	short
safety	reasonable (risk for fetus?)	goodprotection of fetussatisfactory
questionable effect of maternal ab	heavy	heavy
immunosuppression possible	no	fetopathogenicity possible
no		