

# Intratypic heterologous vaccination in cattle can confer antibody response in presence of maternally derived antibodies

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## Introduction

- Maternally derived antibodies in cattle can interfere with vaccination of young cattle.
- Can intra serotype heterologous vaccination circumvent the problem?

## Materials and Methods

- 5 groups of 5 calves
- 15 calves (groups 1 to 3) were fed with colostrum of cows which had been vaccinated with trivalent (A Turkey 14/98, O Manisa, Asia-1 Shamir) Cedivac-FMD vaccine in each trimester of pregnancy.
- Group 4 and 5 were born from non-vaccinated dams.
- Group 1 and 4 were vaccinated with a monovalent homologous Cedivac-FMD vaccine type A Turkey 14/98 2 weeks after birth
- Group 2 and 5 were vaccinated with a monovalent heterologous Cedivac-FMD vaccine type A<sub>22</sub> Iraq 2 weeks after birth
- Serum was collected on a weekly basis up to 6 weeks after vaccination
- Sera were tested by virus neutralisation against type A<sub>22</sub> Iraq, A Turkey 14/98, O Manisa and Asia-1 Shamir.

## Results

- In group 1, no antibody response was observed after vaccination with the homologous A Turkey 14/98 vaccine,
- In group 2, a more than 4 fold increase of the mean antibody titre was observed 6 weeks after vaccination when vaccinated with a heterologous A<sub>22</sub> vaccine.
- In the calves without maternally derived antibodies, groups 4 and 5, a good antibody response was seen after vaccination with a both monovalent vaccines.
- No significant difference in the decrease of neutralizing antibodies directed against type O Manisa and Asia-1 was seen in group 1 and 2 in comparison to group 3 which was not vaccinated.
- The half-life of maternally derived antibodies was estimated to be 26 days with a 95% confidence interval of 23 – 31 days.

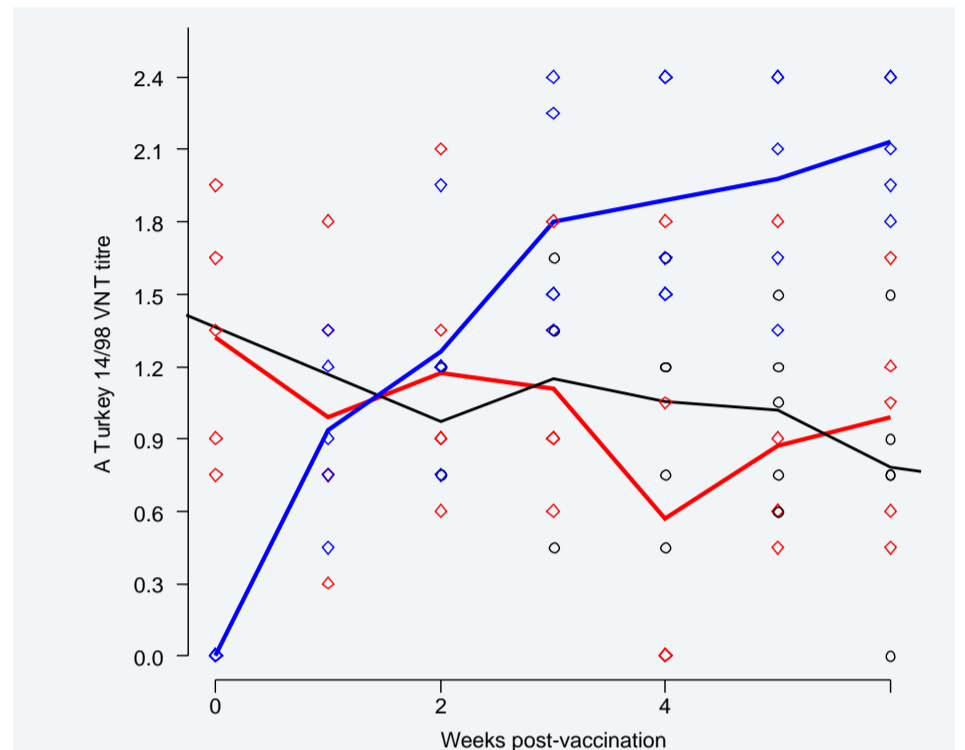


Figure 1: Mean titre and individual observations of calves vaccinated with monovalent A Turkey 14/98 vaccine, group 1 with maternally derived antibodies in red and group 4 without maternally derived antibodies in blue (in black the non-vaccinated calves, group 3, with maternally derived antibodies).

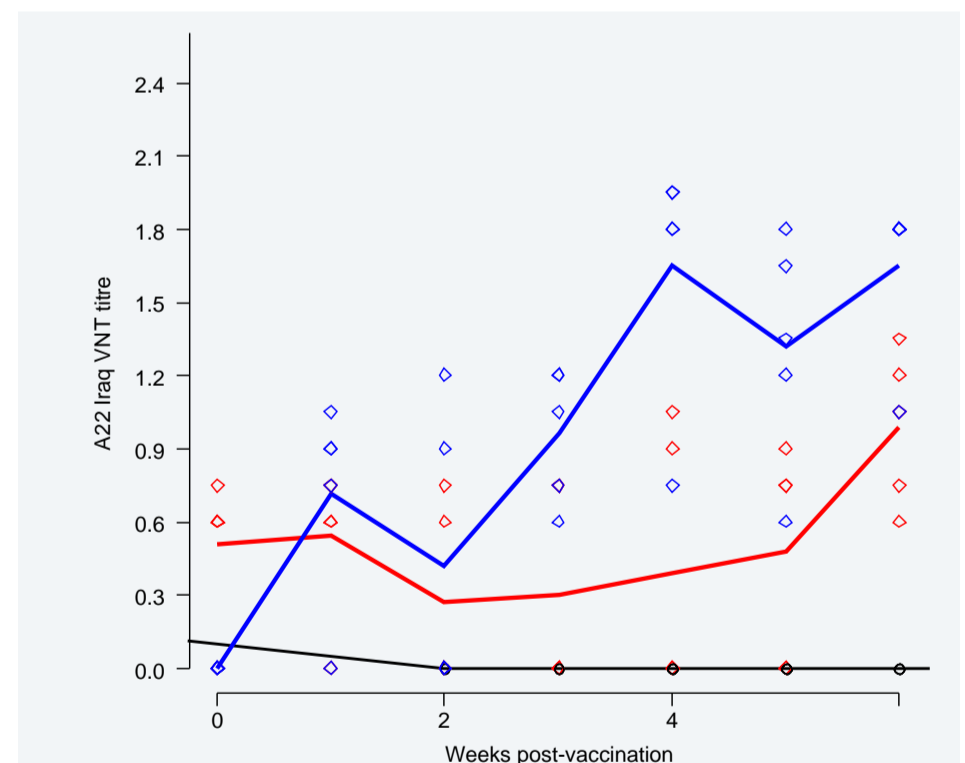


Figure 2: Mean titre and individual observations of calves vaccinated with monovalent A<sub>22</sub> Iraq vaccine, group 2 with maternally derived antibodies in red and group 5 without maternally derived antibodies blue (in black the non-vaccinated calves, group 3, with maternally derived antibodies).

## Conclusions

- The immune system of calves is capable of responding to vaccination at 2 weeks of age
- Intratypic heterologous FMD vaccination can circumvent the inhibiting effect of maternally derived antibodies