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Coudert P.

in

Baselga M. (ed.), Marai I.F.M. (ed.).
Rabbit production in hot climates

Zaragoza : CIHEAM
Cahiers Options Méditerranéennes; n. 8

1994
pages 501-504

POTENTIALS OF PRECOCIOUS EIMERIA STRAINS FOR VACCINATION OF RABBITS AGAINST COCCIDIOSIS

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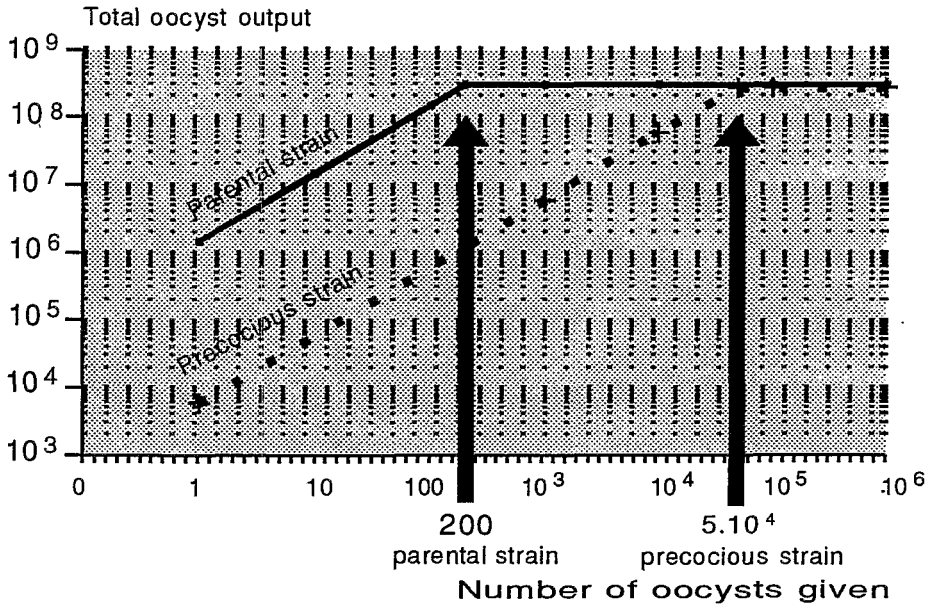
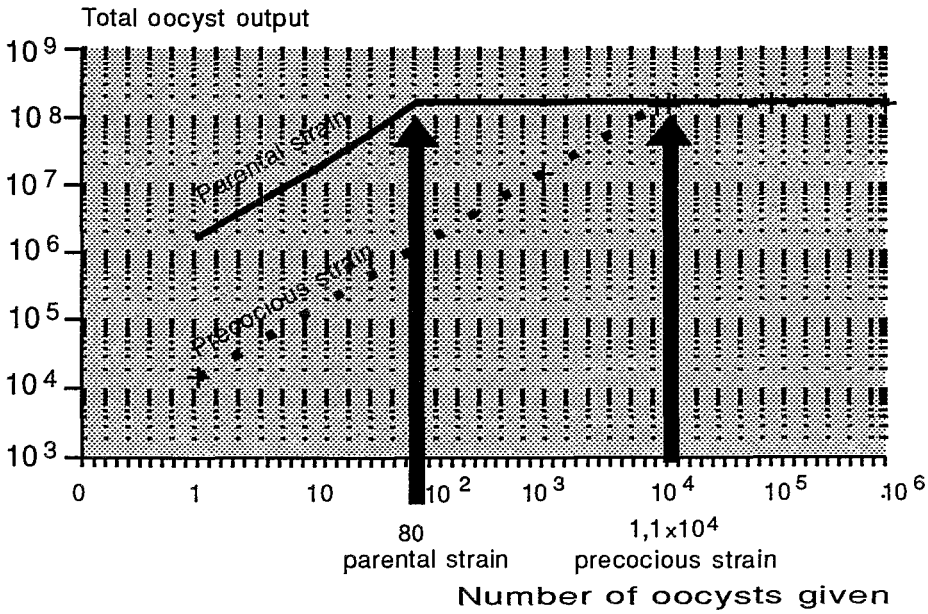
For more than 10 years, coccidiosis has been controlled by the use of Robenidine (Cyanamid) in commercial rabbitries. Now, four chemo-resistant *Eimeria spp* are very frequently identified: *E.magna,E.media*, *E. perforans* and *E. coecicola*. Precocious strains of *E.magna* et *E.media* were obtained and their potential as a vaccine in laboratory conditions was described (D.Licois, P.Coudert 1992,1993). The potential in the field of industrial rabbit production has yet to be evaluated by monitoring the efficacy, the mode of administration, the innocuity and the epidemiology of the vaccine strains. Some aspects of these problems are discussed, taking into account distinctiv features of rabbit breeding, of rabbit coccidiosis and of precocious strains. In rabbit breeding, all prophylactic or therapeutic actions should concern not only the young growing rabbits but also the nursing females because it is essentially during the days preceding and following weaning that contamination of sucklings progressively takes place. Contamination of young rabbits with precocious strains must occur just before weaning but as long as they only consume their mother's milk there is little or no multiplication of the parasite. On this and other accounts, it seems necessary to control the eimerian pattern in the whole rabbits unit (eradication of the wild strains) rather than individual situations. Therefore it is necessary to study not only systematic individual vaccination upon weaning or bulk vaccination at regular intervals (monthly ?) but also the survival of the vaccine and of the wild strains. We have also to consider that the does are constantly the epidemiological source of diffusion of pathogenic agents. If the excretion of the vaccine strain oocysts were sufficient to vaccinate the litter, then the most elegant way of vaccination would have been found. Theoritically there is no technical problem to obtaining enough oocysts to vaccinate all the industrially produced rabbits: one or two rabbits produce enough oocysts to vaccinate 10^4 rabbits (i.e. the annual production of one French breeder). Moreover the purity of the precocious strain is easy to achieve because of morphological differences from the wild strains.

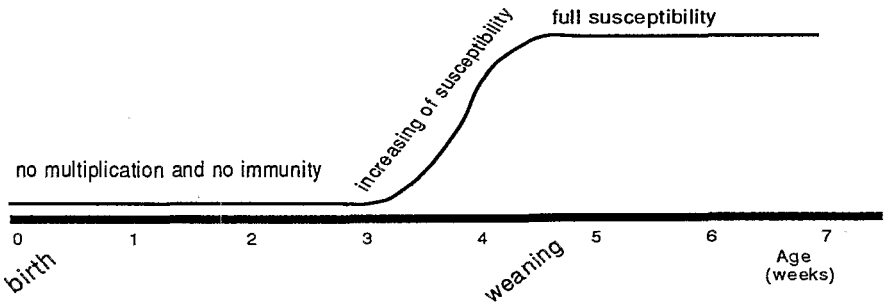
MULTIPLICATION RATE : PARENTAL AND PRECOCIOUS STRAINS OF E.MEDIA

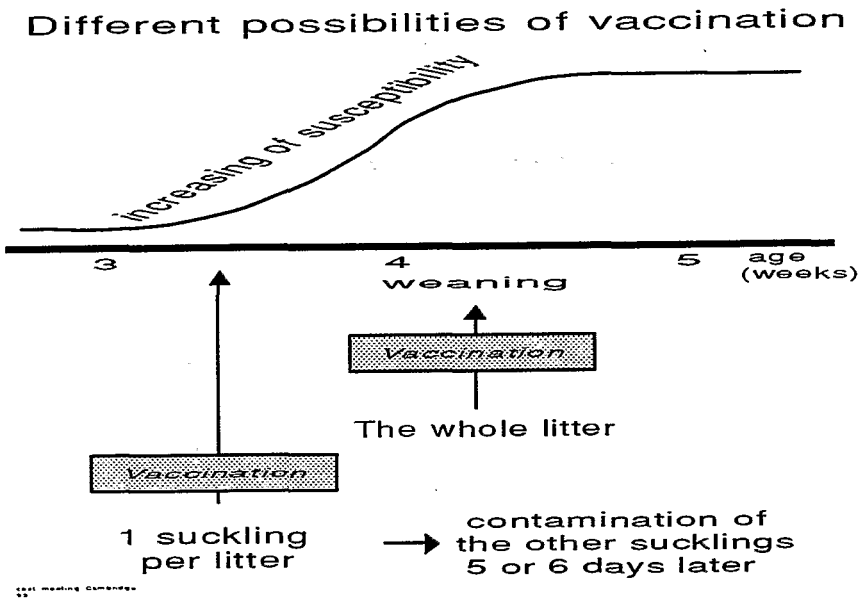


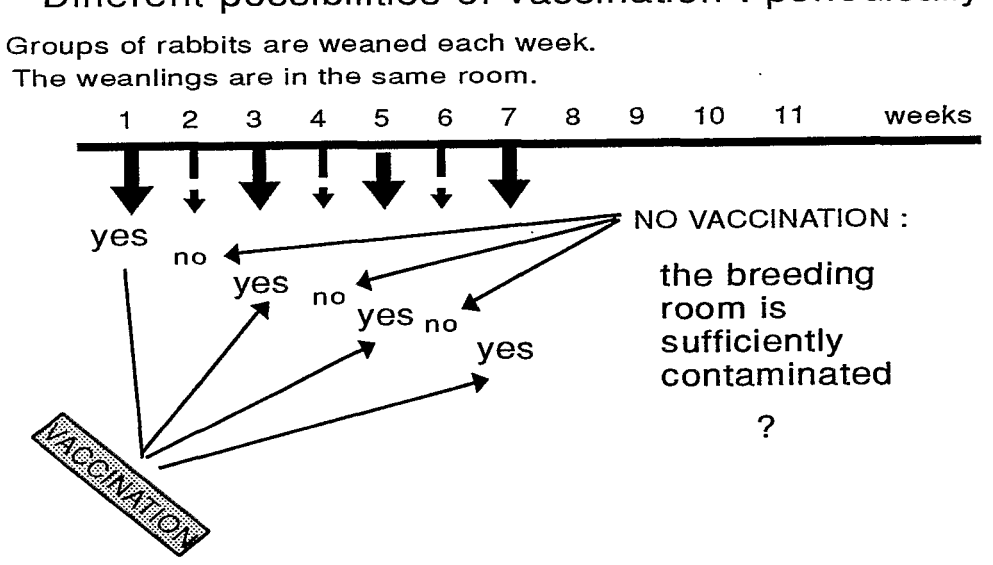
MULTIPLICATION RATE : PARENTAL AND PRECOCIOUS STRAINS OF E.MAGNA

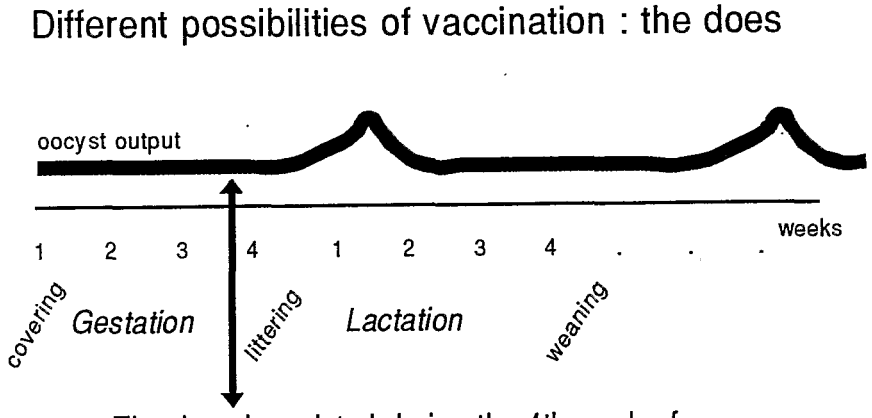


The susceptibility of the suckling depend on the age




Different possibilities of vaccination
increasing of susceptibility
3
4
weaning
5
age
(weeks)
Vaccination
The whole litter
Vaccination
1 suckling
per litter
contamination of
the other sucklings
5 or 6 days later


Different possibilities of vaccination : periodically.
Groups of rabbits are weaned each week.
The weanlings are in the same room.
1 2 3 4 5 6 7 8 9 10 11 weeks
yes
no
yes
no
yes
no
yes
NO VACCINATION :
the breeding
room is
sufficiently
contaminated
?
VACCINATION


Different possibilities of vaccination : the does
oocyst output
weeks
1 2 3 4 1 2 3 4
covering
Gestation
littering
Lactation
weaning
The does inoculated during the 4th week of
gestation with the precocious strain will
contaminated her litter ? Vaccination of the
suckling not necessary ?
Diminution of the occurence of the wild strains ?

Production of the vaccin

- European Rabbit production : 600 000 T ==> 430 x 10^6 Rabbits
- Number of oocysts necessary for the vaccination : 4,3 x 10^{11}
- Number of does necessary for the production: 800 ==> 1 breeder

THEORETICAL ADVANTAGES OF THE PRECOCIOUS LINES
E.magna and *E.media* of the rabbit

1. Easy to recognize : morphological difference
2. Stability : 13 passages without modification
   reverse selection unsuccessful
3. Protective dose is low : ± 1000 oocysts
   Pathogenic dose is hight : 10^5 to 10^6 ooc.
4. Production is easy : 10^8 per rabbit