

**Introduction:** Avian coccidiosis is an economically important disease caused by infection of the intestine by protozoan parasites from the genus *Eimeria*. Whereas prophylactic medication is the predominant method used to suppress flock infections, new disease control strategies are needed. The **profilin 3-1E protein** is a highly conserved apicomplexa ligand for toll-like receptors (TLR) that stimulates broad-spectrum immunity. Here we show that **recombinant protein vaccines derived from profilin combined with Montanide™ vaccine adjuvants** increase protective immunity in broiler chickens against infection with multiple *Eimeria* spp.

## INJECTABLE COCCIDIOSIS RECOMBINANT VACCINE: CROSS-PROTECTION TRIAL *Eimeria* Profilin + Montanide™ ISA 71 VG

### MATERIAL AND METHODS

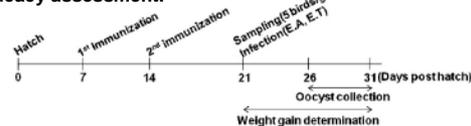
**Animals:** Male broiler chickens (Ross). 13 birds/group.  
**Antigen:** *E. acervulina* recombinant **profilin** (20-50 µg/dose)  
**Groups:**  
- Profilin (20, 30 or 40 µg) + Montanide™ ISA 71 VG  
**Injection:** Water in oil adjuvant, 70% w/w  
- **Control:** Non adjuvanted profilin (50 µg), **Injection**  
- Control: Non vaccinated animals / challenged  
- Control: Non vaccinated animals/ non challenged

### Vaccination:

1<sup>st</sup> immunization on D7, 2<sup>nd</sup> immunization on D14.

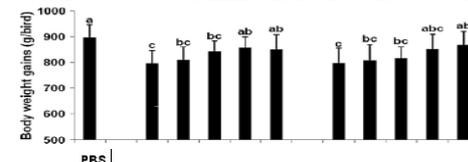
**Challenge procedure:** On D21, oral infection with 10<sup>4</sup> *E. acervulina* or *E. tenella* oocysts.

### Efficacy assessment:

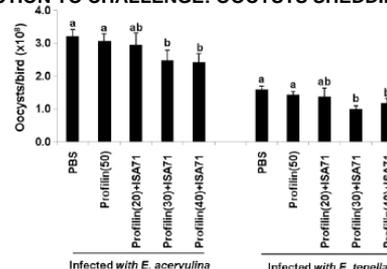


### RESULTS

#### PROTECTION TO CHALLENGE: BODY WEIGHT GAIN



#### PROTECTION TO CHALLENGE: OOCYSTS SHEDDING



*E. acervulina* profilin  
(30µg/dose)  
+  
Montanide™ ISA 71 VG

↓  
Cross-protection against  
→ *E. acervulina*  
→ *E. tenella*

## MUCOSAL COCCIDIOSIS RECOMBINANT VACCINE: *Eimeria* Profilin + Montanide™ IMS 1313N VG

### MATERIAL AND METHODS

**Animals:** Male broiler chickens (Ross).  
7 days old at D7. 20 birds/group.  
**Antigen:** *Eimeria* recombinant **profilin** (50 µg/dose)

### Groups: 6 groups

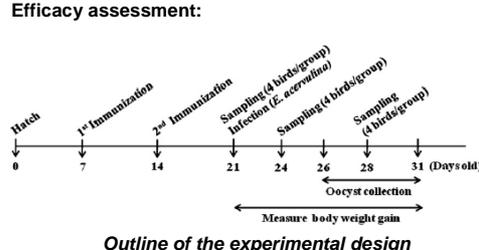
- ISA 71: Antigen + Montanide™ ISA 71 VG  
**Injection:** Water in oil adjuvant, 70% w/w  
- IMS 1313: Antigen + Montanide™ IMS 1313 N VG  
**Oral administration:** Nano-emulsion adjuvant, 50% w/w  
- **Control +:** Commercial live vaccine Coccivac B  
**Ocular administration**  
- **Control -:** Non adjuvanted antigen, **Injection**  
- Control: Non vaccinated animals / challenged  
- Control: Non vaccinated animals/ non challenged

### Vaccination:

1<sup>st</sup> immunization on D7, 2<sup>nd</sup> immunization on D14.

**Challenge procedure:** On D21, oral infection with 10<sup>4</sup> *E. acervulina* oocysts.

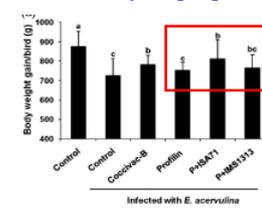
### Efficacy assessment:



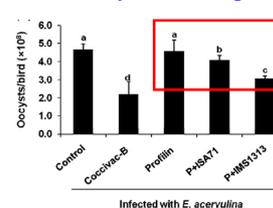
### RESULTS

#### PROTECTION TO CHALLENGE:

##### Body weight gain

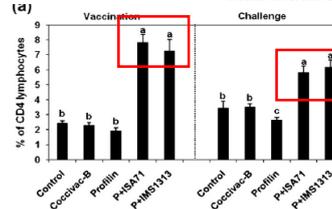


##### Oocysts shedding

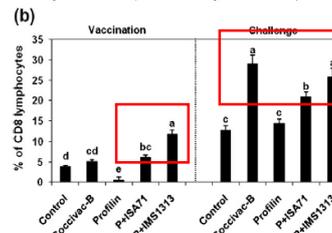


#### IEL POPULATIONS:

##### CD4+ Lymphocytes



##### CD8+ Lymphocytes



### Conclusion

These results indicate that injectable or oral immunization of chickens with recombinant profilin subunit adjuvanted vaccines increases protective immunity against experimental *Eimeria* spp. infection and that this strategy can work as a non-antibiotic alternative for coccidiosis control.

These results also show that **Montanide™ ISA 71 VG** and **Montanide™ IMS 1313N VG** are efficient adjuvants for injectable and mucosal poultry vaccines. Further studies will be needed to assess efficacy in field conditions.