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SEROLOGICAL PATTERNS OF FALSE POSITIVE REACTIONS IN BOVINE BRUCELLOSIS IN SAONE-ET-LOIRE (FRANCE)

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Les profils sérologiques des animaux ayant présenté une réaction faussement positive dans le cadre de la prophylaxie de la Brucellose bovine en Saône-et-Loire lors des campagnes 1993-94 et 1994-95 sont décrits dans cette étude. Deux populations peuvent être distinguées : les animaux uniquement positifs à l'épreuve à l'antigène tamponné (EAT+ FC-), et ceux également positifs au test de fixation du complément (EAT+ FC+). Comparativement à l'ensemble de la population étudiée, les EAT+ FC+ sont jeunes, de race à viande. Les titres sérologiques décroissent systématiquement d'un contrôle au suivant. Plus le titre sérologique initial est faible, plus la négativation est rapide (77% au premier contrôle pour les EAT+ FC-, 67% pour les EAT+ FC+). Les animaux EAT+ FC- jeunes se négativent plus rapidement que les âgés. Une réactivation immunitaire est observée suite au passage au pâturage pour les animaux positifs lors des deux campagnes étudiées.

Unusual high rates of false positive serological reactions in bovine Brucellosis (FPSR) were observed in the EU and in New-Zealand since 1990, whatever the blood test used. These FPSR, probably due to infection with a cross-reacting agent (eg *Yersinia enterocolitica* O:9), are discriminated in practice from Brucellosis reactions on the basis of a specific epidemiological survey and a rapid negativation of the serological titres observed during subsequent controls (Benet *et al*, 1991).

Individual serological profiles (Rose-Bengal test [RBT] and complement fixation test [CFT] results) and the animal characteristics (age, breed and sex) were recorded in Saône-et-Loire (France) during the 1993-94 and the 1994-95 screening campaigns. This area was free of Brucellosis; vaccination has been banned in 1984; and a high herd prevalence rate of FPSR was observed (9.27% in 1993-94 and 8.44% in 1994-95). 1133 and 897 FPSR observations were collected for both campaigns.

Two populations were discriminated according to their screening serological profile: the RBT+ CFT- animals, and the RBT+ CFT+ animals (Table I). CFT was only performed to confirm a positive RBT at the screening control. Consequently, no RBT- CFT+ reaction was observed. The negativation rates between the screening and the first control were high, depending on the screening serological status (Table I). For further controls (2nd, 3rd and 4th), negativation rates were decreasing, whatever the population, linked with a selection of the animals with a long-lasting serological response. The RBT+ CFT- population included proportionally more older, more dairy, and more female animals; the negativation rate was higher for the young and the dairy animals, and was not related to the delay between the screening and the first control. The RBT+ CFT+ population showed a negativation rate linked negatively to the screening CFT titre (odds-ratio of being negative: 3.0 for the animals with a CFT titre between 20 and 80 UI/ml compared to those with a higher CFT titre), and positively to the delay between the screening and the control.

For a given animal and a given screening campaign, the titres were always decreasing or stable from a control to the following one. However, for a given animal positive in the two campaigns, the 1994-95 screening titre was always equal or higher than the last control of the 1993-94 campaign.

These patterns were different from those generally observed in case of a *Brucella* infection: decrease in serological titres are seldom at the beginning of a true Brucellosis outbreaks. The different profiles observed in FPSR could be linked to several immunological status, following a previous contact with an infectious agent. Immunological response seems to be more intensive and transient in young animals, less intensive but long-lasting in older ones. The immunological response boost observed between years might be linked either to a subsequent contact with the causal agent or to an immunological sensitivity increase at the cowshed entrance.

Table I
Screening test results and seronegativation of the FPSR animals according to the previous results.

Campaigns	Serological test result		No (%)	Seronegativation (%)							
	RBT	CFT	Screening	Screening-Control 1		Control 1-Control 2		C2 - C3		C3 - C4	
1993-94	+	-	553 (49)	417/539	(77.4)	107/170	(62.9)	30/62	(48)	11/20	(55)
	+	[20 - 80] IU/ml	406 (36)	285/402	(70.9)	52/95	(55)	8/19	(42)	1/5	
	+	> 80 IU/ml	163 (15)	84/155	(54.2)	7/13	(54)	0/2			
	-	+				9/14	(64)	4/6		2/3	
Total			1122	795/1111	(71.6)	178/297	(59.9)	42/91	(46)	14/28	(50)
1994-95	+	-	551 (63)	416/535	(77.8)	68/112	(60.7)	16/28	(57)	3/6	
	+	[20 - 80] IU/ml	199 (23)	149/196	(76.0)	21/32	(66)	3/4			
	+	> 80 IU/ml	127 (14)	60/116	(51.7)	8/18	(44)	1/3			
	-	+				10/18	(56)	3/6			
Total			877	641/868	(73.9)	108/182	(59.3)	23/41	(56)	3/6	

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