

OIE rules for the official confirmation of BSE in bovines (based on an initial reactive result in an approved rapid test) by using a second rapid test

The OIE Manual (2008), Chapter 2.4.6 on Bovine Spongiform encephalopathy describes how cases of BSE should be detected and confirmed. Confirmation should always be in a National Reference Laboratory.

Whether BSE-infected animals are to be identified by passive or active surveillance, it is good practice to detect and confirm disease by a combination of at least two test methods. So, whether the primary test is one of the confirmatory methods based on PrP detection (i.e. immunohistochemistry or SAF-immunoblot) or histopathology, or a rapid test, it is important to apply a secondary test to confirm a positive or inconclusive result by primary test. This is not necessary if the primary test is negative. Where there is a conflict between primary and secondary test results, further tests using immunohistochemistry or SAF-immunoblot (or approved alternative) should be applied or samples should be submitted to an OIE Reference laboratory for resolution.

Prior to the revision of the Chapter, an OIE expert group on TSE diagnostics agreed that, under certain circumstances, an EU or OIE approved rapid test could be used for the confirmation of BSE in bovines following an initial reactive result with an approved rapid test. Such approval would be dependent on a review of reagents used in each rapid test to ensure that the pairs of tests used were compatible. Following that review, on the basis of confidential data released by test manufacturers, the following procedure is recommended.

1. The confirmation must always be carried out in a National Reference Laboratory (NRL) for TSE.
2. The second test must include a negative control and a bovine BSE sample as positive control.
3. The second test must be a different test* (in other words, two positive results involving the same test are insufficient for confirmation).
4. If a Western blot is used as first test, this result must be documented and submitted to the NRL.
5. One of the two methods must be a Western blot.

The combination of the two rapid tests can only be used for the confirmation of a BSE case. A negative result by secondary test is insufficient to define a case as negative following a primary positive result. BSE suspect cases with discordant rapid test results must therefore be investigated further using either the SAF-immunoblot (or approved alternative) or IHC for the demonstration of abnormal PrP^{Sc}, or if these methods are not available, by histopathology. If histopathology is unable to confirm the initial reactive result, samples should be submitted to an OIE Reference laboratory for further examination.

*A number of criteria were reviewed including insistence on the use of different antibodies or different epitopes. However, it was concluded that the conditions for antibody binding in solution and to a membrane were sufficiently different and stringent as to render these test principles "different" and unlikely to produce the same false positive results. One of the tests used must be a western blot as western blot results give additional information (molecular weight and pattern) about antibody binding compared to other test formats. This review and guidance was conducted by Dr K A Webster, VLA, UK, Prof. Martin Groschup, FLI, Germany, and Dr J P.M. Langeveld, CIDC-Lelystad, Netherlands.

The following matrix provides a simple means of identifying secondary tests that are appropriate for currently approved rapid tests used for primary screening.

		second test allowed under certain conditions for confirmation								
		IDEXX HerdCheck® BSE	Roboscreen Beta Prion	Roche PrionScreen	Enfer TSE kit v2	Prionics® Check Western	Prionics® Check LIA	Prionics® Check PrioSTRIP	Bio-Rad TeSeE	Enfer TSE Kit v3
first test used	IDEXX HerdCheck® BSE	-	-	-	-	+	-	-	-	-
	Roboscreen Beta Prion	-	-	-	-	+	-	-	-	-
	Roche PrionScreen	-	-	-	-	+	-	-	-	-
	Enfer TSE kit v2	-	-	-	-	+	-	-	-	-
	Prionics® Check Western	+	+	+	+	-	+	+	+	+
	Prionics® Check LIA	-	-	-	-	+	-	-	-	-
	Prionics® Check PrioSTRIP	-	-	-	-	+	-	-	-	-
	Bio-Rad TeSeE	-	-	-	-	+	-	-	-	-
	Enfer TSE Kit v3	-	-	-	-	+	-	-	-	-

Key

- + two tests which may be used in combination to detect and confirm a BSE positive case.
- two tests which may not be used in combination.

NB The BioRad TeSeE Western Blot has been approved by the OIE and may be used as a confirmatory method in combination with rapid tests for BSE confirmation.