

Surveillance and Monitoring Brucellosis at Denpasar Veterinary Center Working Area in the 2016

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Abstract

Background: The situation of Brucellosis in the working area of the Denpasar Veterinary Center (BBVet) varies between provinces. The provinces of Bali and NTB have been declared free of Brucellosis. However, specifically in NTT, only Sumba Island was declared free of Brucellosis. The situation of Brucellosis in NTT Province, on the island of Timor, Belu Regency and TTU is a heavily infected area of brucellosis with a prevalence of > 2%, while other islands have an unknown prevalence. One Brucellosis reactor found in Ende District in 2006. Continuous surveillance was carried out as an early detection step to keep the area free. **Objectives:** Brucellosis and monitor the possibility of entry/emergence of new reactors in the region, and to determine the prevalence of Brucellosis in areas that are not yet free of Brucellosis. **Methodology:** The samples tested were samples received by the BBVet Denpasar Bacteriology laboratory during 2016. The samples were tested using the Rose Bengal Plate Test (RBPT) method if positive continued with the Complement Fixation Test (CFT) test. **Results:** A positive sample of CFT expressed as a Brucellosis reactor. The test results of 4,602 serum samples from Bali Province and 2,504 serum samples from NTB Province were all negative for Brucella antibodies. Whereas serum samples from NTT Province were 1,533 samples, three positive samples were CUC brucellosis; namely, two (2) positive samples from 175 serum samples came from Malacca District and one (1) positive sample from 73 serum samples came from North Central Timor District (TTU). Whereas samples from the districts of Alor, Ende, Lembata, Manggarai, West Manggarai, East Manggarai, Nagekeo, Ngada, RotenDao, Southwest Sumba, West Sumba, East Sumba, East Timor Tengah (TTS), and Kupang City, **Conclusion:** all negative. Based on these data it can be concluded that the Provinces of Bali and NTB are still free of Brucellosis.

Keywords: *Brucellosis, BPT, CFT, Bali, NTB, NTT.*

Preliminary

Brucellosis in cattle is usually caused by *Brucella abortion*, which is one of the economically significant diseases because it is zoonotic (transmitted to humans). Besides, *B. abortion* can be used in bioterrorist attacks [1]. Brucellosis is one of 22 strategic infectious animal diseases in Indonesia, is zoonotic (contagious to humans) and is a disease that is difficult to treat.

Bali Island, Lombok Island, and Sumbawa Island have been declared as Brucellosis-free areas by the Minister of Agriculture of the Republic of Indonesia with a Minister of Agriculture Decree No. 443 / Kits / TN.540 / 7/2002 for Bali Island, Minister of Agriculture Decree No. 444 / Kits / TN.540 /

7/2002 for Lombok Island in Nusa Tenggara Barat (NTB) Province, and Minister of Agriculture Decree No. 97 / Kits / PO.660 / 2/2006 for Sumbawa Island in NTB province. However, specifically in Nusa Tenggara Timur (NTT) Province, only Sumba Island was declared free of Brucellosis by Decree of the Minister of Agriculture No. 52 / Kits / PD.630 / 1/2015 dated 19 January 2015.

The situation of Brucellosis in NTT Province varies among existing islands. On the island of Timor, Belu and TTU districts are heavily infected with brucellosis with a prevalence of >2%, while other islands have an unknown prevalence. Brucellosis has been found in several districts on Flores Island such as

Ende Regency in 2002 [2], Sikka Regency in 1996. Continuous surveillance is carried out as an early detection step to maintain a region free of Brucellosis and monitor the possibility of the entry/emergence of new reactors in the region, and to determine the prevalence of Brucellosis in areas that are not yet free of Brucellosis. For this reason, the Denpasar Veterinary Center has conducted surveillance in the work areas of Bali, West Nusa Tenggara, and East Nusa Tenggara Provinces.

Materials and Methods

Theory

In the surveillance of brucellosis in the working area of the 2016 Denpasar Veterinary Center, the ingredients used were *Brucella abortus* RBPT and CFT antigens, supplements, hemolysin, sheep blood cells, cut buffers, and the tools used were microplate, WHO plate, pipette, incubator, rotary agglutination, and rotary agglutination.

Method

The samples tested were samples received by the BBVet Denpasar Bacteriology laboratory during 2016. The samples were tested using the Rose Bengal Plate Test (RBPT) method if positive continued with the Complement Fixation Test (CFT) test [3].

The RBPT test procedure is as follows:

- Serum samples removed from the freezer, and RBT brucella antigens are removed from the refrigerator and allow a few minutes at room temperature.
- The serum to be tested is taken with a Pasteur pipette and drops on the WHO plate (80 holes), in holes number 1 to number 78 for the tested serum. Positive serum control dropped on hole number 80, after that drops of RBT brucella antigens (25µl) were equal in all holes.

- Shake for 4 minutes until homogeneous using a rotary agglutination and read the results.

The CFT Test Procedure is as follows:

- Enter the serum to be tested onto each 50µl hole from the serum 1A hole for sample no. 1, to the serum 10A hole for sample no. 10, negative control serum 11A hole, hole 12B for the positive serum control. The plate is water bathed for 30 minutes to be activated. (all serums including positive and negative controls)
- Add 25µl CFT buffer in holes B1 - B12 to holes H1 - H12 (holes A1 - A12 do not add CFT buffer)
- Dilute Serum: serially, take 25 µl from hole A1-12 to B1-12 to hole H1-12
- Add the Antigen (depending on the available antigen titer) 25 µl to hole C1-12 to hole H1-12. In holes, A1-12 and B1-12 as anti-complement control added 25µl CFT buffer (to equalise volume)
- Add Complement (depending on available complement titers) 25µl of all plate holes from A to H, incubation at 37°C for 30 minutes.
- Add to all 25µl plate hole cells, then shaker for 45 minutes.
- Leave it for a while and do the reading.

Results

Test Results 4,602 serum samples from Bali Province and 2,504 serum samples from NTB Province were all Brucellosis negative. While the test results of 1,533 samples from NTT Province, three positive samples of Brucellosis by CFT were three samples from Malacca Regency and 1 sample from North Central Timor Regency. Complete results as presented in Tables 1, 2 and 3.

Table 1: Brucellosis Serology Test Results in Bali Province

Districts	Number of Samples	Total Positive Brucellosis
Badung	522	0
Bangli	385	0
Buleleng	616	0
Denpasar	193	0
Gianyar	641	0
Jembrana	1045	0
Karangasem	400	0
Klungkung	350	0
Tabanan	450	0
Amount	4602	0

Table 2: Brucellosis Serology Test Results in NTB Province

Districts	Number of Samples	Total Positive Brucellosis
Bima	287	0
Kota Bima	0	0
Dompu	651	0
Sumbawa	377	0
Sumbawa Barat	50	0
Island Sumbawa	1365	0
Lombok Barat	166	0
Lombok Tengah	156	0
Lombok Timur	417	0
Lombok Utara	277	0
Mataram	123	0
Island Lombok	1139	0
Amount NTB	2504	0

Table 3: Results of the Brucellosis Serological Test of NTT Province

Districts	Number of Samples	Total Positive Brucellosis
Alor	100	0
Ende	25	0
Kota Kupang	178	0
Kupang	108	0
Lembata	50	0
Malaka	175	2 (1,14%)
Manggarai	50	0
Manggarai Barat	50	0
Manggarai Timur	50	0
Nagekeo	93	0
Ngada	65	0
Rote Ndao	28	0
SBD	80	0
Sumba Barat	155	0
Sumba Timur	140	0
TTU	73	1 (1,37%)
TTS	113	0
Amount	1533	

Discussion

In the working area of the Denpasar Veterinary Center, Bali Island has been declared historically free of Brucellosis. Lombok Island has been released from Brucellosis since 2002 (Minister of Agriculture Decree Number 444 / Kits / TN.540 / 7/2002), through mass surveillance for three years and then followed by the release of Sumbawa Island in 2006 (Minister of Agriculture Decree Number: 97 / Kits / PO.660 / 2/2006), with the same pattern of liberation as Lombok Island [4].

All reactors found within the liberation period have been destroyed or forced to cut. Then following the island of Sumba was declared free of brucellosis based on the decision of the Minister of Agriculture No. 52 / Kits / PD.630 / 1/2015 dated January 19, 2015. The results of testing 4,602 serum samples against Brucellosis in 2016 in the Bali province, all were negative for Brucellosis. As is the case for the province of West Nusa Tenggara, of the 2,504 serum samples tested came from Sumbawa and Lombok, all were negative for Brucella antibodies. It indicates that until now the provinces of Bali and NTB are still free of

Brucellosis. In 2016, Brucellosis in East Timor found in Malacca District (1.14%) and TTU (1.37%) as it is known that East Timor is a Brucellosis-infected area with a prevalence of <2% in TTS, Kupang and Kupang City, and prevalence of > 2% in TTU and Belu Districts (including Malacca District which is a division of Belu Regency). In Belu and TTU districts, a Brucellosis vaccination program has been carried out using the Brucella abortus strain S19 vaccine, so it is not known with certainty whether the antibody came from the results of vaccination or natural infection.

The prevalence of brucellosis in Kupang City and Kupang Regency is uncertain even though the results of the 2016 sample testing are all negative. It needs to be further confirmed by adequate sampling according to epidemiological rules so that the actual prevalence can be known because the results of the 2015 surveillance show that there are indications of an increase in reactor prevalence in Kupang City. The results of the 2015 Brucellosis surveillance on Flores Island in Sikka, Ngada, Nagekeo District were all negative, as well as in 2016 all samples from Ende, Manggarai, West

Manggarai, East Manggarai, Nagekeo, and Ngada Districts were negative brucellosis. The prevalence of Brucellosis on Flores Island is still very low, Brucellosis on Flores Island was reported in Ende District in 1 cow in 2006 [2] and the cow has conditionally slaughtered.

Based on the results of surveillance in several years on the island of Flores, the possibility for eradication programs is possible to carry out, before it becomes spreading. Brucellosis in other Regencies in NTT Province such as Lembata Regency, Saburaijua Regency, Rotendau Regency is still negative, but to be declared a Brucellosis-free region a structured survey needs to be carried out with a sample that meets epidemiological requirements and is carried out simultaneously and continuously and tightens livestock traffic. Inter-island.

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Conclusions and Suggestions

Conclusion

Based on the surveillance results above, it concluded that

- The Provinces of Bali and West Nusa Tenggara are still areas free of Brucellosis
- More intensive surveillance is needed on East Timor to get a more accurate Brucellosis prevalence.
- The Brucellosis eradication program on Alor, Lembata, Flores and Rotendau Island is possible

Suggestion

Further surveillance is needed by taking samples that are more representative and comply with epidemiological rules, and to get more accurate Brucellosis prevalence data on the Land of Timor [5, 6].

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