**Meta-analysis for the selection of prior information on sensitivity and specificity of iELISA, RBT and SAT: Rahman et al (2018) Bayesian evaluation of three serological tests for the diagnosis of bovine brucellosis in Bangladesh.**

Based on a review of the literature, no information was available regarding the true prevalence and test sensitivities and specificities for bovine brucellosis in Bangladesh. Therefore, prior information from other similar studies was used. Based on several studies obtained from the literature, a meta-analysis (Random effect) was performed using “metandi” in Stata 12.1 [1]. To perform meta-analysis using “metandi”, the number of true positives (TP), true negatives (TN), false positives (FP) and false negatives (FN) were to be known for each study. We included those studies published until 2012 which had information on TP, FP, TN, and FN. Tables 1, 2 and 3 respectively showed data for iELISA, RBT and SAT which were used for meta-analysis.

Table 1. Indirect ELISA data for the meta-analysis

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Source | Se (95% CI) | Sp (95% CI) | TP | FP | FN | TN | Cut-off value |
| Van Aert et al. [2] (S 19) | 71.4 (41.9, 91.6) | 100 (99.5, 100)\* | 10 | 0 | 4 | 677 | 3× OD of the blank |
| Van Aert et al. [2] (S 2308) | 70.6 (44.0, 89.7) | 100 (99.5, 100)\* | 12 | 0 | 5 | 677 | 3× OD of the blank |
| Dohoo et al. [3] | 96.6 (92.6, 98.7) | 99.0 (98.3, 99.5) | 168 | 11 | 6 | 1117 | OD ≥ 0.22 |
| Dohoo et al. [3] | 94.8 (90.4, 97.6) | 99.5 (98.8, 99.8) | 165 | 6 | 9 | 1122 | OD ≥ 0.26 |
| Dohoo et al. [3] | 94.3 (89.7, 97.2) | 99.8 (99.4, 99.9) | 164 | 2 | 10 | 1126 | OD ≥ 0.30 |
| Dohoo et al. [3] | 92.5 (87.5, 96.0) | 99.9 (99.5, 99.9) | 161 | 1 | 13 | 1127 | OD ≥ 0.34 |
| Saegerman et al. [4] | 100 (69.2, 100)\* | 97.1 (95.8, 98.1) | 10 | 27 | 0 | 909 | OD ≥ 0.25 (2.5 IU / ml) |
| Abernethy et al. [5] | 67.2 (59.5, 74.4) | 100 (99.9, 100)\* | 109 | 0 | 53 | 2663 | 𝛼 |
| Uzal et al. [6] | 98.9 (96.1, 99.9) | 98.8 (96.4, 99.7) | 182 | 3 | 2 | 240 | 31% of positive serum |
| Samartino et al. [7] | 98.2 (97.2, 98.9) | 98.6 (97.1, 99.4) | 982 | 7 | 18 | 493 | 40% of positive serum |

𝛼 = 100 x (OD450 value of the sample − OD450 value of the negative control)/(mean OD450 value of the positive control − OD450 value of the negative control); \*97.5% CI; Se=Sensitivity; Sp= Specificity CI= Confidence Interval; TP= True Positive; FP= False Positive; TN= True Negative; FN= False Negative

Table 2. Rose Bengal Test (RBT) data for the meta-analysis

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Source | Se (95% CI) | Sp (95% CI) | TP | FP | FN | TN |
| Van Aert et al. [2] (S 19) | 35.7 (12.8, 64.9) | 100 (99.5, 100)\* | 5 | 0 | 9 | 677 |
| Van Aert et al. [2] (S 2308) | 76.5 (50.1, 93.2) | 100 (99.5, 100)\* | 13 | 0 | 4 | 677 |
| Abernethy et al. [5] | 67.2 (59.5, 74.4) | 100 (99.9, 100)\* | 104 | 0 | 58 | 2663 |
| Samartino et al. [7] | 98.2 (97.2, 98.9) | 98.6 (97.1, 99.4) | 961 | 11 | 39 | 489 |
| Dajer et al. [8] | 96.2 (94.1, 97.7) | 68.8 (64.5, 72.9) | 481 | 153 | 9 | 337 |
| Muma et al. [9] | 92.6 (85.4, 96.9) | 80.0 (63.1, 91.6) | 88 | 7 | 7 | 28 |
| Mainer Jaime et al. [10] | 100 (98.1, 100)\* | 86.4 (79.1, 91.9) | 189 | 17 | 0 | 108 |

\*97.5% CI; Se=Sensitivity; Sp= Specificity CI= Confidence Interval; TP= True Positive; FP= False Positive; TN= True Negative; FN= False Negative

Table 3. Slow Agglutination Test (SAT) data for the meta-analysis

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Source | Se (95% CI) | Sp (95% CI) | TP | FP | FN | TN | Cut-off value |
| Van Aert et al. [2] | 35.7 (12.8, 64.9) | 100 (99.5, 100)\* | 4 | 0 | 10 | 677 | 30 IU/ ml |
| Lord et al. [11] | 100 (93.6, 100)\* | 100 (96.4, 100)\* | 56 | 0 | 0 | 100 | 100 IU/ ml |
| Abernethy et al. [5] | 75.9 (68.6, 82.3) | 98.6 (98.0, 98.9) | 123 | 38 | 39 | 2624 | 31 IU / ml |
| Stemshorn et al. [12] | 68.9 (61.2, 75.8) | 99.5 (98.6, 99.8) | 115 | 4 | 52 | 726 | 60 IU / ml |

\*97.5% CI; Se=Sensitivity; Sp= Specificity CI= Confidence Interval; TP= True Positive; FP= False Positive; TN= True Negative; FN= False Negative

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