

**Table S1:** Part 1: Overview on the physical examination of 250 calves between the 3<sup>rd</sup> and the 6<sup>th</sup> days of age. The physical examination was carried out according to Baumgartner and Wittek 2018.

| Clinical assessment             | N calves | % calves |
|---------------------------------|----------|----------|
| <b>General behavior</b>         |          |          |
| Normal                          | 203      | 81.2     |
| Slightly depressed              | 43       | 17.2     |
| Moderately depressed            | 3        | 1.2      |
| Severely depressed              | 1        | 0.4      |
| <b>Posture</b>                  |          |          |
| Normal                          | 227      | 90.8     |
| Arched back                     | 15       | 6.0      |
| Extended/sawhorse like          | 1        | 0.4      |
| Other                           | 7        | 2.8      |
| <b>Body condition</b>           |          |          |
| Very good                       | 236      | 94.4     |
| Good                            | 14       | 5.6      |
| <b>Hair and skin assessment</b> |          |          |
| Smooth, shiny, flat lying       | 229      | 91.6     |
| Shaggy                          | 19       | 7.6      |
| Alopecia                        | 1        | 0.4      |
| Missing                         | 1        | 0.4      |
| <b>Skin turgor</b>              |          |          |
| Normal                          | 234      | 93.6     |
| Skin fold remains               | 1        | 0.4      |
| Slight enophthalmus             | 4        | 1.6      |
| Moderate enophthalmus           | 1        | 0.4      |
| Missing                         | 10       | 4.0      |
| <b>Navel palpation</b>          |          |          |
| Normal                          | 225      | 90.0     |
| Enlarged                        | 8        | 3.2      |
| Enlarged and painful            | 8        | 3.2      |
| Enlarged, painful and rough     | 9        | 3.6      |
| <b>Mucus membranes</b>          |          |          |
| Normal                          | 244      | 97.6     |
| Anaemia                         | 5        | 2.0      |
| Cyanosis                        | 1        | 0.4      |
| Icterus                         | 0        | 0        |
| Reddened                        | 0        | 0        |
| <b>Nasal discharge</b>          |          |          |
| No discharge                    | 221      | 88.4     |
| Serous                          | 27       | 10.8     |
| Mucous                          | 2        | 0.8      |
| Pus                             | 0        | 0        |

**Table S2:** Part 2: Overview on the physical examination of 250 calves between the 3<sup>rd</sup> and the 6<sup>th</sup> days of age. The physical examination was carried out according to Baumgartner and Wittek 2018.

| Clinical assessment                      | N calves | % calves |
|--|----------|----------|
| <b>Mucus membranes</b>                   |          |          |
| Normal                                   | 244      | 97.6     |
| Anaemia                                  | 5        | 2.0      |
| Cyanosis                                 | 1        | 0.4      |
| <b>Nasal discharge</b>                   |          |          |
| No discharge                             | 221      | 88.4     |
| Serous                                   | 27       | 10.8     |
| Mucous                                   | 2        | 0.8      |
| <b>Coughing</b>                          |          |          |
| No coughing                              | 226      | 90.4     |
| Intermittent coughing                    | 12       | 4.8      |
| Missing                                  | 12       | 4.8      |
| <b>Lung auscultation</b>                 |          |          |
| Normal                                   | 190      | 76.0     |
| Moderate aggravated breathing sounds     | 57       | 22.8     |
| Focal no respiration sounds              | 1        | 0.4      |
| Missing                                  | 2        | 0.8      |
| <b>Heart sounds</b>                      |          |          |
| Normal                                   | 244      | 97.6     |
| Heart murmur                             | 6        | 2.4      |
| <b>Abdominal auscultation</b>            |          |          |
| Intestine contraction normal             | 224      | 89.6     |
| Reduced contraction                      | 4        | 1.6      |
| Increased contraction                    | 22       | 8.8      |
| <b>Swing and percussion auscultation</b> |          |          |
| Negative right and left                  | 250      | 100      |
| <b>Amount of faeces</b>                  |          |          |
| +  | 149      | 59.6     |
| ++                                       | 92       | 36.8     |
| +++                                      | 9        | 3.6      |
| <b>Faecal color</b>                      |          |          |
| Grey                                     | 1        | 0.4      |
| Yellow                                   | 58       | 23.2     |
| Ochre                                    | 130      | 52.0     |
| Brown                                    | 59       | 23.6     |
| Reddish                                  | 1        | 0.4      |
| Greenish                                 | 1        | 0.4      |
| <b>Faecal consistency</b>                |          |          |
| Normal                                   | 233      | 93.2     |
| Fluid                                    | 9        | 3.6      |
| Watery                                   | 5        | 2.0      |
| Dry                                      | 3        | 1.2      |
| <b>Faecal admixture</b>                  |          |          |
| No                                       | 245      | 98.0     |
| Yes                                      | 5        | 2.0      |

**Table S3:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal general behavior with a low serum Brix level in the first week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference.

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix ≥8.4 % |          | OR (95 % CI)     |
|----------------------------------|-------------------|-------------|----------|-------------|----------|------------------|
|                                  |                   | N calves    | % calves | N calves    | % calves |                  |
| <b>Diarrhea</b>                  |                   |             |          |             |          |                  |
| Healthy                          | 215               | 74          | 34.4     | 141         | 65.6     | 1                |
| Moderate diarrhea                | 24                | 13          | 54.2     | 11          | 45.8     | 2.25 (0.96-5.26) |
| Severe diarrhea                  | 11                | 6           | 54.5     | 5           | 45.5     | 2.29 (0.68-7.75) |
| <b>BRD</b>                       |                   |             |          |             |          |                  |
| Healthy                          | 234               | 87          | 37.2     | 147         | 62.8     | 1                |
| Moderate pneumonia               | 9                 | 3           | 33.3     | 6           | 66.7     | 0.84 (0.21-3.46) |
| Severe pneumonia                 | 7                 | 3           | 42.9     | 4           | 57.1     | 1.27 (0.28-5.78) |
| <b>Navel illness</b>             |                   |             |          |             |          |                  |
| Healthy                          | 249               | 92          | 36.9     | 157         | 63.1     |                  |
| Moderate enlarged navel          | 0                 |             |          |             |          | n. a.            |
| Severely enlarged navel          | 1                 | 1           | 100      | 0           | 0        |                  |
| <b>Diarrhea and BRD</b>          |                   |             |          |             |          |                  |
| Healthy                          | 246               | 92          | 34.7     | 154         | 62.6     |                  |
| Moderate                         | 2                 | 0           | 0        | 2           | 100      | n. a.            |
| Severe                           | 2                 | 1           | 50.0     | 1           | 50.0     |                  |
| <b>Abnormal general behavior</b> |                   |             |          |             |          |                  |
| Healthy                          | 230               | 82          | 35.7     | 148         | 64.3     | 1                |
| Moderate                         | 16                | 10          | 62.5     | 6           | 37.5     | 3.05 (1.05-8.55) |
| Severe                           | 4                 | 1           | 25.0     | 3           | 75.0     | 0.60 (0.06-5.88) |

**Table S4:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal abnormal general behavior with a low serum Brix level in the first week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference. Moderate and severe disease events were summarized as having the disease (yes) or not having the disease (healthy). All statistically significant values ( $p < 0.05$ ) are highlighted with an asterix \*.

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix ≥8.4 % |          | OR (95 % CI)     |
|----------------------------------|-------------------|-------------|----------|-------------|----------|------------------|
|                                  |                   | N calves    | % calves | N calves    | % calves |                  |
| <b>Diarrhea</b>                  |                   |             |          |             |          |                  |
| Healthy                          | 215               | 74          | 34.4     | 141         | 65.6     | 1                |
| Diarrhea                         | 35                | 19          | 54.3     | 16          | 45.7     | 2.26 (1.1-4.65)* |
| <b>BRD</b>                       |                   |             |          |             |          |                  |
| Healthy                          | 234               | 87          | 37.2     | 147         | 62.8     | 1                |
| Pneumonia                        | 16                | 6           | 37.5     | 10          | 62.5     | 1.01 (0.36-2.89) |
| <b>Navel illness</b>             |                   |             |          |             |          |                  |
| Healthy                          | 249               | 92          | 36.9     | 157         | 63.1     | n. a.            |
| Navel illness                    | 1                 | 1           | 100      | 0           | 0        |                  |
| <b>Diarrhea and BRD</b>          |                   |             |          |             |          |                  |
| Healthy                          | 246               | 92          | 34.7     | 154         | 62.6     | 1                |
| Diarrhea + Resp.<br>Disease      | 4                 | 1           | 25.0     | 3           | 75.0     | 0.56 (0.06-5.44) |
| <b>Abnormal general behavior</b> |                   |             |          |             |          |                  |
| Healthy                          | 230               | 82          | 35.7     | 148         | 64.3     | 1                |
| Abnormal                         | 20                | 11          | 55.0     | 9           | 45.0     | 2.21 (0.88-5.56) |

**Table S5:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal general behavior with a low serum Brix level in the second week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference. All statistically significant values ( $p < 0.05$ ) are highlighted with an asterix \*.

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix $\geq 8.4$ % |          | OR (95 % CI)     |
|----------------------------------|-------------------|-------------|----------|-------------------|----------|------------------|
|                                  |                   | N calves    | % calves | N calves          | % calves |                  |
| <b>Diarrhea</b>                  |                   |             |          |                   |          |                  |
| Healthy                          | 209               | 69          | 33.0     | 140               | 67.0     | 1                |
| Moderate diarrhea                | 24                | 12          | 50.0     | 12                | 50.0     | 2.03 (0.87-4.74) |
| Severe diarrhea                  | 12                | 9           | 75.0     | 3                 | 25.0     | 6.1 (1.6-23.26)* |
| <b>BRD</b>                       |                   |             |          |                   |          |                  |
| Healthy                          | 234               | 84          | 37.2     | 147               | 62.8     |                  |
| Moderate pneumonia               | 4                 | 0           | 0        | 4                 | 100.0    | n. a.            |
| Severe pneumonia                 | 7                 | 3           | 42.9     | 4                 | 57.1     |                  |
| <b>Navel illness</b>             |                   |             |          |                   |          |                  |
| Healthy                          | 244               | 90          | 36.9     | 154               | 63.1     |                  |
| Moderate enlarged navel          | 0                 |             |          |                   |          | n. a.            |
| Severely enlarged navel          | 1                 | 0           | 0        | 1                 | 100.0    |                  |
| <b>Diarrhea and BRD</b>          |                   |             |          |                   |          |                  |
| Healthy                          | 240               | 89          | 37.1     | 151               | 62.9     |                  |
| Moderate                         | 3                 | 0           | 0        | 3                 | 100      | n. a.            |
| Severe                           | 2                 | 1           | 50.0     | 1                 | 50.0     |                  |
| <b>Abnormal general behavior</b> |                   |             |          |                   |          |                  |
| Healthy                          | 230               | 83          | 36.1     | 147               | 63.9     |                  |
| Moderate                         | 14                | 7           | 50.0     | 7                 | 50.0     | n. a.            |
| Severe                           | 1                 | 0           | 0        | 1                 | 100.0    |                  |

**Table S6:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal general behavior with a low serum Brix level in the second week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference. Moderate and severe disease events were summarized as having the disease (yes) or not having the disease (healthy). All statistically significant values ( $p < 0.05$ ) are highlighted with an asterix\*.

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix ≥8.4 % |          | OR (95 % CI)      |
|----------------------------------|-------------------|-------------|----------|-------------|----------|-------------------|
|                                  |                   | N calves    | % calves | N calves    | % calves |                   |
| <b>Diarrhea</b>                  |                   |             |          |             |          |                   |
| Healthy                          | 209               | 69          | 33.0     | 140         | 67.0     | 1                 |
| Diarrhea                         | 36                | 21          | 58.3     | 15          | 41.7     | 2.84 (1.38-5.85)* |
| <b>BRD</b>                       |                   |             |          |             |          |                   |
| Healthy                          | 234               | 84          | 37.2     | 147         | 62.8     | 1                 |
| Pneumonia                        | 11                | 3           | 27.3     | 8           | 72.7     | 0.63 (0.16-2.45)  |
| <b>Navel illness</b>             |                   |             |          |             |          |                   |
| Healthy                          | 244               | 90          | 36.9     | 154         | 63.1     | n. a.             |
| Navel illness                    | 1                 | 0           | 0        | 1           | 100.0    |                   |
| <b>Diarrhea and BRD</b>          |                   |             |          |             |          |                   |
| Healthy                          | 240               | 89          | 37.1     | 151         | 62.9     | 1                 |
| Diarrhea + Resp.<br>Disease      | 5                 | 1           | 20.0     | 4           | 80.0     | 0.42 (0.04-3.86)  |
| <b>Abnormal general behavior</b> |                   |             |          |             |          |                   |
| Healthy                          | 230               | 83          | 36.1     | 147         | 63.9     | 1                 |
| Abnormal                         | 15                | 7           | 46.7     | 8           | 53.3     | 1.55 (0.54-4.42)  |

**Table S7:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal abnormal general behavior with a low serum Brix level in the third week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference. All statistically significant values ( $p < 0.05$ ) are highlighted with an asterix\*.

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix ≥8.4 % |          | OR (95 % CI)        |
|----------------------------------|-------------------|-------------|----------|-------------|----------|---------------------|
|                                  |                   | N calves    | % calves | N calves    | % calves |                     |
| <b>Diarrhea</b>                  |                   |             |          |             |          |                     |
| Healthy                          | 211               | 70          | 33.2     | 141         | 66.8     | 1                   |
| Moderate diarrhea                | 14                | 8           | 57.1     | 6           | 42.9     | 2.69 (0.90-8.06)    |
| Severe diarrhea                  | 9                 | 8           | 88.9     | 1           | 11.1     | 16.13 (1.98-125.0)* |
| <b>BRD</b>                       |                   |             |          |             |          |                     |
| Healthy                          | 231               | 85          | 36.8     | 146         | 63.2     |                     |
| Moderate pneumonia               | 2                 | 0           | 0        | 2           | 100.0    | n. a.               |
| Severe pneumonia                 | 1                 | 1           | 100.0    | 0           | 0        |                     |
| <b>Navel illness</b>             |                   |             |          |             |          |                     |
| Healthy                          | 233               | 86          | 36.9     | 147         | 63.1     |                     |
| Moderate enlarged navel          | 1                 | 0           | 0        | 1           | 100.0    | n. a.               |
| Severely enlarged navel          | 0                 | 0           | 0        | 0           | 0        |                     |
| <b>Diarrhea and BRD</b>          |                   |             |          |             |          |                     |
| Healthy                          | 231               | 85          | 36.8     | 146         | 63.2     |                     |
| Moderate                         | 2                 | 0           | 0        | 2           | 100.0    | n. a.               |
| Severe                           | 1                 | 1           | 100.0    | 0           | 0        |                     |
| <b>Abnormal general behavior</b> |                   |             |          |             |          |                     |
| Healthy                          | 228               | 82          | 36.0     | 146         | 64.0     |                     |
| Moderate                         | 6                 | 4           | 66.7     | 2           | 33.3     | n. a.               |
| Severe                           | 0                 | 0           | 0        | 0           | 0        |                     |

**Table S8:** Binary logistic regression analysis was carried out using the serum Brix levels as dependant variable. The table gives an overview on the association of diarrhea, bovine respiratory disease (BRD), navel illness, diarrhea and BRD and an abnormal general behavior with a low serum Brix level in the third week of life. Odds ratios (OR) were calculated using the basis category = healthy calves (OR = 1) as reference. Moderate and severe disease events were summarized as having the disease (yes) or not having the disease (healthy).

| Factor                           | N calves<br>total | Brix <8.4 % |          | Brix ≥8.4 % |          | OR (95 % CI)       |
|----------------------------------|-------------------|-------------|----------|-------------|----------|--------------------|
|                                  |                   | N calves    | % calves | N calves    | % calves |                    |
| <b>Diarrhea</b>                  |                   |             |          |             |          |                    |
| Healthy                          | 211               | 70          | 33.2     | 141         | 66.8     | 1                  |
| Diarrhea                         | 23                | 16          | 69.6     | 7           | 30.4     | 4.61 (1.81-11.76)* |
| <b>BRD</b>                       |                   |             |          |             |          |                    |
| Healthy                          | 231               | 85          | 36.8     | 146         | 63.2     | 1                  |
| Pneumonia                        | 3                 | 1           | 33.3     | 2           | 66.7     | 0.86 (0.08-9.62)   |
| <b>Navel illness</b>             |                   |             |          |             |          |                    |
| Healthy                          | 233               | 86          | 36.9     | 147         | 63.1     | n. a.              |
| Navel illness                    | 1                 | 0           | 0        | 1           | 100.0    |                    |
| <b>Diarrhea and BRD</b>          |                   |             |          |             |          |                    |
| Healthy                          | 231               | 85          | 36.8     | 146         | 63.2     | 1                  |
| Diarrhea + Resp.<br>Disease      | 3                 | 1           | 33.3     | 2           | 66.7     | 0.86 (0.08-9.62)   |
| <b>Abnormal general behavior</b> |                   |             |          |             |          |                    |
| Healthy                          | 228               | 82          | 36.0     | 146         | 64.0     | 1                  |
| Abnormal                         | 6                 | 4           | 66.7     | 2           | 33.3     | 3.56 (0.64-20.0)   |



## Kälberkarte für das Projekt „Kolostrumversorgung von Kälbern im Bundesland Salzburg und Validierung eines Immunglobulin-Schnelltests“

LFBIS-Nr. Tierhalter:

Ohrmarke Kalb: AT

Tab. 1: Bitte vom 1.-7. Lebenstag ausfüllen

| Lebenstag                           | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------------------------|---|---|---|---|---|---|---|
| Art der Tränke <sup>1</sup>         |   |   |   |   |   |   |   |
| Uhrzeit der Tränke                  |   |   |   |   |   |   |   |
| Trinkmenge                          |   |   |   |   |   |   |   |
| Allgemeinbefinden <sup>2</sup>      |   |   |   |   |   |   |   |
| Kotkonsistenz <sup>3</sup>          |   |   |   |   |   |   |   |
| Atmung <sup>4</sup>                 |   |   |   |   |   |   |   |
| Husten <sup>5</sup>                 |   |   |   |   |   |   |   |
| Nasenausfluss <sup>6</sup>          |   |   |   |   |   |   |   |
| Nabel <sup>7</sup>                  |   |   |   |   |   |   |   |
| Sonstige Erkrankung                 |   |   |   |   |   |   |   |
| Besondere Vorkommnisse <sup>8</sup> |   |   |   |   |   |   |   |

Tab. 2: Bitte vom 8.-28. Lebenstag ausfüllen

| Lebenstag                           | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|-------------------------------------|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Art der Tränke <sup>1</sup>         |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Trinkmenge                          |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Allgemeinbefinden <sup>2</sup>      |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Kotkonsistenz <sup>3</sup>          |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Atmung <sup>4</sup>                 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Husten <sup>5</sup>                 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Nasenausfluss <sup>6</sup>          |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Nabel <sup>7</sup>                  |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Sonstige Erkrankung                 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Besondere Vorkommnisse <sup>8</sup> |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

Legende auf der Rückseite!



**Legende:**

1: MAT= Milchaustauscher; V= Vollmilch; S= angesäuerte Milch; K=Kolostrum; T= Transitmilch; J= Joghurtränke; (Sonstige Tränken bitte selbstständig ausfüllen)

2: leeres Feld= ungestört; -=Kalb wirkt müde (ggr. ver.); --=festliegend (mgr. ver.); ---=komatös (hgr. ver.)

3: leeres Feld=normal; B= dünnbreiig; W= wässrig

4: leeres Feld =ungestört; +=Kalb atmet schneller; ++=Kalb atmet wesentlich schneller („hechelt“); +++;=Kalb hat Atemnot

5: leeres Feld= ungestört; S=stoßweise (<3 mal); A=anfallsweise (>3 mal);

6: leeres Feld= ungestört; S=serös; M=mukös; E=eitrig

7: leeres Feld= ungestört (ca. 1cm dick); += zweifinger dick; ++= dreifinger dick; +++;=handdick

8: Bitte besondere Vorkommnisse, wie zum Beispiel Enthornung, Kastration, Impfung, Umstallung etc. dokumentieren