Evaluation of the adequate timing to administrate an intramuscular prophylactic penicillin G (procaine benzylpenicillin suspension) in Belgian blue cow before the caesarean section realisation

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Introduction

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Prophylactic antibiotic usage by Belgian veterinarians during elective caesarean section in Belgian blue cattle

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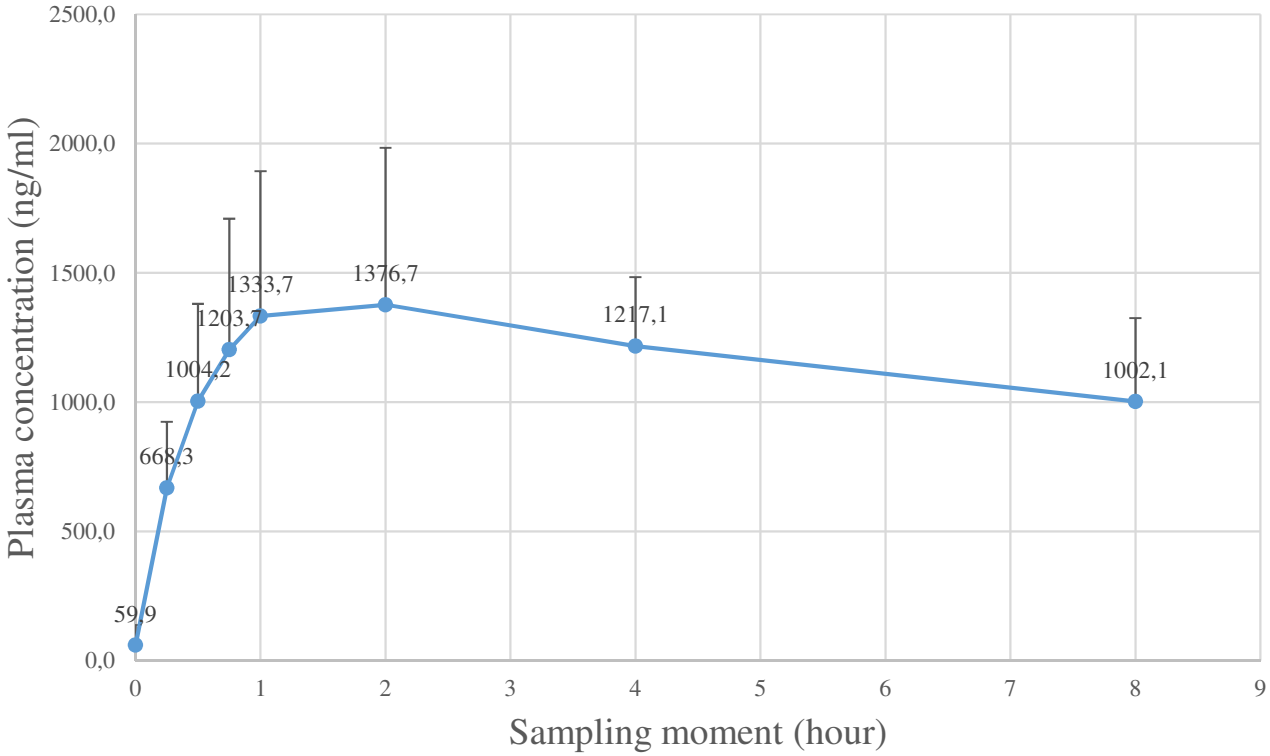
Material and methods

Blood sampling at : - 5, 15, 30, 45, 60, 120, 240, 480 minutes

Results and discussion

Evolution of the average (Mean ± SD) plasmatic concentration (ng/ml) of benzylpenicillin procaine (BPG), according to the sampling moment (hour) for the cows (12 cows) involved in the in the trial.



Results and discussion

Plasmatic concentration (ng/ml) BPG at the different sampling times (minute) for each cow enrolled in the essay **(*Cmax*, *Tmax*)**

Sample	**Time** (minute)	**Cow 1** (ng/ml)	**Cow 2** (ng/ml)	**Cow 3** (ng/ml)	**Cow 4** (ng/ml)	**Cow 5** (ng/ml)	**Cow 6** (ng/ml)	**Cow 7** (ng/ml)	**Cow 8** (ng/ml)	**Cow 9** (ng/ml)	**Cow 10** (ng/ml)	**Cow 11** (ng/ml)	**Cow 12** (ng/ml)
1	0	4.1	62.1	17.7	33.7	3.7	13.3	70.7	39.2	291.9	75.3	22.3	85.3
2	15	466.1	759.1	644.6	373.9	462.8	501.4	572.8	405.6	1226.9	898.0	846.4	862.4
3	30	826.0	1622.0	868.7	668.6	662.7	823.8	633.4	772.1	1790.5	1187.9	1079.7	1115.3
4	45	947.5	1788.7	1132.4	871.8	823.3	1062.2	672.0	716.2	2438.5	1275.5	1478.6	1237.1
5	60	982.1	2252.5	1181.6	889.3	970.4	1189.4	744.4	931.6	2587.2	1427.9	1453.3	1394.7
6	120	884.5	2882.5	1173.5	840.4	1159.3	1375.3	857.2	1014.3	2241.0	1370.1	1459.5	1262.8
7	240	966.0	1596.4	1035.0	918.9	1213.7	1180.5	1087.9	843.4	1300.3	1660.1	1502.5	1300.7
8	480	769.2	1360.8	667.8	840.2	1061.4	940.4	880.2	705.1	668.7	1442.1	1642.6	1046.4

Results and discussion

Plasmatic concentration (ng/ml) of BPG at the different sampling times (minute) for each cow enrolled in the essay **(Concentration > 500 ng/ml)**

Sample	**Time** (minute)	**Cow 1** (ng/ml)	**Cow 2** (ng/ml)	**Cow 3** (ng/ml)	**Cow 4** (ng/ml)	**Cow 5** (ng/ml)	**Cow 6** (ng/ml)	**Cow 7** (ng/ml)	**Cow 8** (ng/ml)	**Cow 9** (ng/ml)	**Cow 10** (ng/ml)	**Cow 11** (ng/ml)	**Cow 12** (ng/ml)
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2	15	466.1	759.1	644.6	373.9	462.8	501.4	572.8	405.6	1226.9	898.0	846.4	862.4
3	30	826.0	1622.0	868.7	668.6	662.7	823.8	633.4	772.1	1790.5	1187.9	1079.7	1115.3
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8	480	769.2	1360.8	667.8	840.2	1061.4	940.4	880.2	705.1	668.7	1442.1	1642.6	1046.4

Results and discussion

Plasmatic concentration (ng/ml) of BPG at the different sampling times (minute) for each cow enrolled in the essay **(Concentration > 1000 ng/ml)**

Sample	**Time** (minute)	**Cow 1** (ng/ml)	**Cow 2** (ng/ml)	**Cow 3** (ng/ml)	**Cow 4** (ng/ml)	**Cow 5** (ng/ml)	**Cow 6** (ng/ml)	**Cow 7** (ng/ml)	**Cow 8** (ng/ml)	**Cow 9** (ng/ml)	**Cow 10** (ng/ml)	**Cow 11** (ng/ml)	**Cow 12** (ng/ml)
1	0	4.1	62.1	17.7	33.7	3.7	13.3	70.7	39.2	291.9	75.3	22.3	85.3
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8	480	769.2	1360.8	667.8	840.2	1061.4	940.4	880.2	705.1	668.7	1442.1	1642.6	1046.4

Conclusion

- The sensible germs to penicillin are inhibited 15 min after the BPG administration

- The Maximal BPG effectiveness, is reached between 60 to 120 minutes after the administration

- Further studies are required to identify the adequate timing for preoperative antibiotic administration:

  - Find the germs susceptible to be encountered during cow C-section
  - Specify the required penicillin MIC against the identified germs

Thank you for your attention