



LifeTide® SW5

Biotechnology to improve the health and productivity of sows and their offspring

**No
Hormone**

**No
Antibiotics**

**Non
GMO**



World's first and only approved Pig DNA medicine

- ✓ Significantly reduced preweaning mortality
- ✓ Vastly increased growth curves, improving days to market
- ✓ Better utilization of nutrients and feed
- ✓ Improve overall immunity and health status
- ✓ Reduction and/or elimination of antibiotics in production
- ✓ Improved days to market
- ✓ Less PSE quality issues
- ✓ Greatly improved yield and carcass values-reduced backfat and more meat in the high-value ham and loins

LifeTide® SW5

The first step towards feeding more protein to an additional three billion humans through our current sow populations is becoming a reality with the advent of a novel biotechnology breakthrough LifeTide®SW5 from Plumline Life Sciences.



Safety

LifeTide®SW5 is simply a small piece of Pig DNA and purified water.

Once injected into the animal, the DNA plasmid is temporarily active and does not migrate from the point of injection. Over time the DNA is lost because it is not integrated in the muscle cells genome. In addition, the DNA does not transfer from parent to offspring, so LifeTide®SW5 has no slaughter withdrawal time requirement. By administering pig's own DNA, LifeTide®SW5 overcomes the safety and toxicity concerns normally associated with other pharmaceuticals products.

Is LifeTide®SW5 a GMO?

LifeTide®SW5 is not a genetically modified organism(GMO), nor are the animals treated with it a GMO.

Once injected into the muscle of the animal, the pig GHRH DNA sequence make pig GHRH protein in the animal. The effect only lasts until normal cell turnover replaces the temporary home for LifeTide®SW5 with a new muscle cell. The protein is a "temporary" switch that is activated and helps the sow "turn on" healthy growth and development.

More pigs to market

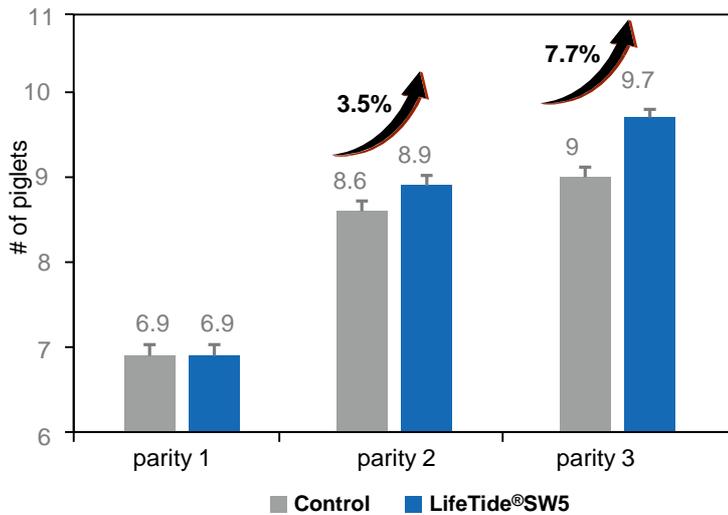
Gestating females(n=997) entered into a trial to determine the effects of LifeTide®SW5 on treated animals and their offspring over three subsequent parities during a 1-year trial in Australia.

- Offspring from treated sows had a significantly lower pre-weaning mortality (26%), as well as a lower post-weaning loss rate (19%)
- The number of offspring from treated sows compared to control animals at slaughter (when animals reached 100kg) was increased by 26%

The Australian trial indicates that LifeTide®SW5 can help increase the number of pigs to market

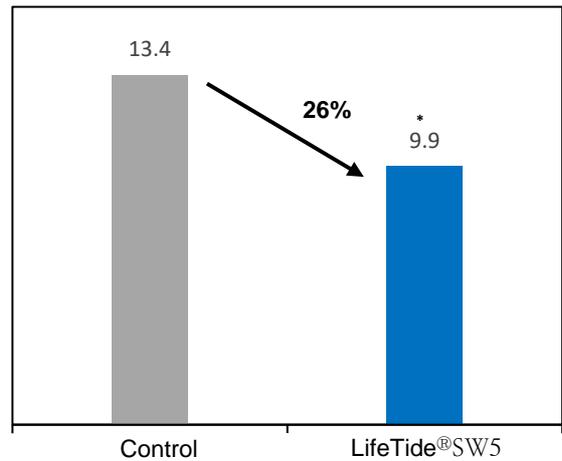
| Variable | Treatment | | |
|------------------|-----------|---------|-------|
| | Control | Treated | Total |
| # of Sows | 488 | 483 | 971 |
| NBA | 4323 | 4274 | 8597 |
| NBA/Sow | 8.86 | 8.85 | 8.85 |
| PWM | 1600 | 1026 | 2626 |
| #Weaned | 2723 | 3248 | 5972 |
| W-Mkt Mortality | 463 | 390 | 853 |
| Mkt. | 2260 | 2858 | 5119 |
| Analyzed at Mkt. | 1508 | 1911 | 3419 |

Number of weaned by post-treatment parity



Person Mol Ther. 2008 Nov;16(11):1891-7.

% of preweaning mortality in post-treatment parity three



Results shown as the percentage of number of deaths divided by the total number of animals for GHRH-treated (n = 203/2,052) and control (n = 288/2,155) animals. * P = 0.0005

Summary of the number weaned by post-treatment parity & overall parity

| | Post-treatment parity 1 | | | | Post-treatment parity 2 | | | | Post-treatment parity 3 | | | |
|----------------|-------------------------|------------|---------|------------|-------------------------|--------------|---------|------------|-------------------------|---------------|---------|------------|
| | Treatment | | Control | | Treatment | | Control | | Treatment | | Control | |
| Overall parity | N | Mean ± SEM | N | Mean ± SEM | N | Mean ± SEM | N | Mean ± SEM | N | Mean ± SEM | N | Mean ± SEM |
| Total | 483 | 6.9 ± 0.13 | 488 | 6.9 ± 0.13 | 340 | 8.9* ± 0.12 | 348 | 8.6 ± 0.12 | 181 | 9.7** ± 0.10 | 185 | 9.0 ± 0.12 |
| Parity 1 | 125 | 5.6 ± 0.28 | 122 | 5.5 ± 0.28 | — | — | — | — | — | — | — | — |
| Parity 2 | 83 | 7.0 ± 0.31 | 87 | 7.3 ± 0.29 | 79 | 9.3 ± 0.20 | 84 | 8.9 ± 0.26 | — | — | — | — |
| Parity 3 | 54 | 7.1 ± 0.39 | 51 | 7.5 ± 0.39 | 61 | 9.3** ± 0.22 | 70 | 8.6 ± 0.26 | 37 | 9.8 ± 0.23 | 47 | 9.5 ± 0.22 |
| Parity 4 | 63 | 7.5 ± 0.29 | 69 | 7.3 ± 0.28 | 45 | 9.2 ± 0.30 | 42 | 9.0 ± 0.23 | 36 | 9.6** ± 0.22 | 38 | 8.7 ± 0.32 |
| Parity 5 | 67 | 7.6 ± 0.23 | 64 | 7.3 ± 0.38 | 54 | 8.7 ± 0.31 | 52 | 8.4 ± 0.35 | 29 | 10.1** ± 0.24 | 23 | 8.6 ± 0.35 |
| Parity 6 | 62 | 7.7 ± 0.39 | 64 | 7.3 ± 0.35 | 48 | 8.8 ± 0.51 | 49 | 8.8 ± 0.30 | 35 | 9.5 ± 0.24 | 34 | 9.3 ± 0.22 |
| Parity 7 | 29 | 6.6 ± 0.52 | 31 | 7.2 ± 0.56 | 52 | 8.2 ± 0.33 | 51 | 8.0 ± 0.32 | 24 | 9.3* ± 0.35 | 24 | 8.5 ± 0.37 |
| Parity 8 | — | — | — | — | 1 | 9.0 ± (—) | — | — | 20 | 9.8** ± 0.20 | 19 | 8.8 ± 0.25 |

Where N is the number of sows with litters.
*0.05 < P < 0.10, t-test; **statistically significant P < 0.05, t-test.

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Reversing the Tide of Pre-weaning Mortality

- Year-in, year-out, the best pork producers lose upwards of 10% to 20% of their pigs from conception until market.
- It is estimated that a fifth of total meat production potential is lost to pre-weaning mortality, which claims the largest percentage of those deaths.

How Does LifeTide®SW5 Work?

- LifeTide®SW5 is a DNA sequence that after intramuscular injection and activation, enters skeletal muscle cells at the injection site and resides within the cell of the injected muscle until they naturally turnover.
- The inside of the back leg is typically selected as the site of injection due to the accessibility of the large leg muscles and the relatively thin covering of skin and fat.
- Following injection, the treated muscle cells produce pig GHRH protein, which enters the muscle's blood supply and is transported to the pituitary gland.
- The pig GHRH protein then stimulates the gestating sow's release of increased amounts of naturally produced and regulated GH.
- This enhanced level of GH release results in a healthier, more vibrant piglet at birth that is stronger and more immunocompetent.

What's My Return on Investment in LifeTide®SW5?

While every operation is different, the financial benefits of LifeTide®SW5 is directly related to the value of the additional pigs that go to market.

LifeTide®SW5 is especially beneficial to a producer who wants low turnover in the sow herd and wants to maintain the sow herd for an increased number of parities.

Return on investment is very clear and vast. It all starts by asking, "what are additional weaned pigs worth?"

Sensitivity Analysis for Alternative Market Hog and Feed Prices

Net benefits attributed to LifeTide®SW5(US\$/Sow/Lifetime)

Best Case

Carcass price (country\$/kg of carcass weight)

| | \$ 0.76 | \$ 0.89 | \$ 1.01 | \$ 1.14 | \$ 1.27 | \$ 1.39 | \$ 1.52 | \$ 1.65 | \$ 1.77 | \$ 1.90 | \$ 2.03 | \$ 2.15 | \$ 2.28 |
|----------|----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| \$ 0.101 | \$ 272 | \$ 389 | \$ 505 | \$ 621 | \$ 738 | \$ 854 | \$ 971 | \$ 1,087 | \$ 1,204 | \$ 1,320 | \$ 1,436 | \$ 1,553 | \$ 1,669 |
| \$ 0.114 | | \$ 359 | \$ 476 | \$ 592 | \$ 709 | \$ 825 | \$ 941 | \$ 1,058 | \$ 1,174 | \$ 1,291 | \$ 1,407 | \$ 1,523 | \$ 1,640 |
| \$ 0.127 | \$ 214 | \$ 330 | \$ 446 | \$ 563 | \$ 679 | \$ 796 | \$ 912 | \$ 1,028 | \$ 1,145 | \$ 1,261 | \$ 1,378 | \$ 1,494 | \$ 1,610 |
| \$ 0.139 | \$ 184 | \$ 301 | \$ 417 | \$ 533 | \$ 650 | \$ 766 | \$ 883 | \$ 999 | \$ 1,115 | \$ 1,232 | \$ 1,348 | \$ 1,465 | \$ 1,581 |
| \$ 0.152 | \$ 155 | \$ 271 | \$ 388 | \$ 504 | \$ 620 | \$ 737 | \$ 853 | \$ 970 | \$ 1,086 | \$ 1,203 | \$ 1,319 | \$ 1,435 | \$ 1,552 |
| \$ 0.165 | \$ 125 | \$ 242 | \$ 358 | \$ 475 | \$ 591 | \$ 707 | \$ 824 | \$ 940 | \$ 1,057 | \$ 1,173 | \$ 1,290 | \$ 1,406 | \$ 1,522 |
| \$ 0.177 | \$ 96 | \$ 212 | \$ 329 | \$ 445 | \$ 562 | \$ 678 | \$ 795 | \$ 911 | \$ 1,027 | \$ 1,144 | \$ 1,260 | \$ 1,377 | \$ 1,493 |
| \$ 0.190 | \$ 67 | \$ 183 | \$ 300 | \$ 416 | \$ 532 | \$ 649 | \$ 765 | \$ 882 | \$ 998 | \$ 1,114 | \$ 1,231 | \$ 1,347 | \$ 1,464 |
| \$ 0.203 | \$ 37 | \$ 154 | \$ 270 | \$ 387 | \$ 503 | \$ 619 | \$ 736 | \$ 852 | \$ 969 | \$ 1,085 | \$ 1,201 | \$ 1,318 | \$ 1,434 |
| \$ 0.215 | \$ 8 | \$ 124 | \$ 241 | \$ 357 | \$ 474 | \$ 590 | \$ 706 | \$ 823 | \$ 939 | \$ 1,056 | \$ 1,172 | \$ 1,289 | \$ 1,405 |
| \$ 0.228 | \$ (21) | \$ 95 | \$ 211 | \$ 328 | \$ 444 | \$ 561 | \$ 677 | \$ 794 | \$ 910 | \$ 1,026 | \$ 1,143 | \$ 1,259 | \$ 1,376 |
| \$ 0.241 | \$ (51) | \$ 66 | \$ 182 | \$ 298 | \$ 415 | \$ 531 | \$ 648 | \$ 764 | \$ 881 | \$ 997 | \$ 1,113 | \$ 1,230 | \$ 1,346 |
| \$ 0.254 | \$ (80) | \$ 36 | \$ 153 | \$ 269 | \$ 386 | \$ 502 | \$ 618 | \$ 735 | \$ 851 | \$ 968 | \$ 1,084 | \$ 1,200 | \$ 1,317 |
| \$ 0.266 | \$ (109) | \$ 7 | \$ 123 | \$ 240 | \$ 356 | \$ 473 | \$ 589 | \$ 705 | \$ 822 | \$ 938 | \$ 1,055 | \$ 1,171 | \$ 1,287 |
| \$ 0.279 | \$ (139) | \$ (22) | \$ 94 | \$ 210 | \$ 327 | \$ 443 | \$ 560 | \$ 676 | \$ 792 | \$ 909 | \$ 1,025 | \$ 1,142 | \$ 1,258 |
| \$ 0.292 | \$ (168) | \$ (52) | \$ 65 | \$ 181 | \$ 297 | \$ 414 | \$ 530 | \$ 647 | \$ 763 | \$ 880 | \$ 996 | \$ 1,112 | \$ 1,229 |
| \$ 0.304 | \$ (198) | \$ (81) | \$ 35 | \$ 152 | \$ 268 | \$ 385 | \$ 501 | \$ 617 | \$ 734 | \$ 850 | \$ 967 | \$ 1,083 | \$ 1,199 |

Most Likely Case

| | \$ 0.76 | \$ 0.89 | \$ 1.01 | \$ 1.14 | \$ 1.27 | \$ 1.39 | \$ 1.52 | \$ 1.65 | \$ 1.77 | \$ 1.90 | \$ 2.03 | \$ 2.15 | \$ 2.28 |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| \$ 0.101 | \$ 136 | \$ 196 | \$ 257 | \$ 318 | \$ 378 | \$ 439 | \$ 500 | \$ 560 | \$ 621 | \$ 682 | \$ 742 | \$ 803 | \$ 864 |
| \$ 0.114 | \$ 120 | \$ 180 | \$ 241 | \$ 302 | \$ 362 | \$ 423 | \$ 484 | \$ 544 | \$ 605 | \$ 666 | \$ 726 | \$ 787 | \$ 848 |
| \$ 0.127 | \$ 104 | \$ 165 | \$ 225 | \$ 286 | \$ 347 | \$ 407 | \$ 468 | \$ 528 | \$ 589 | \$ 650 | \$ 710 | \$ 771 | \$ 832 |
| \$ 0.139 | \$ 88 | \$ 149 | \$ 209 | \$ 270 | \$ 331 | \$ 391 | \$ 452 | \$ 513 | \$ 573 | \$ 634 | \$ 695 | \$ 755 | \$ 816 |
| \$ 0.152 | \$ 72 | \$ 133 | \$ 193 | \$ 254 | \$ 315 | \$ 375 | \$ 436 | \$ 497 | \$ 557 | \$ 618 | \$ 679 | \$ 739 | \$ 800 |
| \$ 0.165 | \$ 56 | \$ 117 | \$ 177 | \$ 238 | \$ 299 | \$ 359 | \$ 420 | \$ 481 | \$ 541 | \$ 602 | \$ 663 | \$ 723 | \$ 784 |
| \$ 0.177 | \$ 40 | \$ 101 | \$ 162 | \$ 222 | \$ 283 | \$ 343 | \$ 404 | \$ 465 | \$ 525 | \$ 586 | \$ 647 | \$ 707 | \$ 768 |
| \$ 0.190 | \$ 24 | \$ 85 | \$ 146 | \$ 206 | \$ 267 | \$ 328 | \$ 388 | \$ 449 | \$ 510 | \$ 570 | \$ 631 | \$ 691 | \$ 752 |
| \$ 0.203 | \$ 8 | \$ 69 | \$ 130 | \$ 190 | \$ 251 | \$ 312 | \$ 372 | \$ 433 | \$ 494 | \$ 554 | \$ 615 | \$ 676 | \$ 736 |
| \$ 0.215 | \$ (8) | \$ 53 | \$ 114 | \$ 174 | \$ 235 | \$ 296 | \$ 356 | \$ 417 | \$ 478 | \$ 538 | \$ 599 | \$ 660 | \$ 720 |
| \$ 0.228 | \$ (23) | \$ 37 | \$ 98 | \$ 159 | \$ 219 | \$ 280 | \$ 340 | \$ 401 | \$ 462 | \$ 522 | \$ 583 | \$ 644 | \$ 704 |
| \$ 0.241 | \$ (39) | \$ 21 | \$ 82 | \$ 143 | \$ 203 | \$ 264 | \$ 325 | \$ 385 | \$ 446 | \$ 506 | \$ 567 | \$ 628 | \$ 688 |
| \$ 0.254 | \$ (55) | \$ 5 | \$ 66 | \$ 127 | \$ 187 | \$ 248 | \$ 309 | \$ 369 | \$ 430 | \$ 491 | \$ 551 | \$ 612 | \$ 673 |
| \$ 0.266 | \$ (71) | \$ (11) | \$ 50 | \$ 111 | \$ 171 | \$ 232 | \$ 293 | \$ 353 | \$ 414 | \$ 475 | \$ 535 | \$ 596 | \$ 657 |
| \$ 0.279 | \$ (87) | \$ (26) | \$ 34 | \$ 95 | \$ 155 | \$ 216 | \$ 277 | \$ 337 | \$ 398 | \$ 459 | \$ 519 | \$ 580 | \$ 641 |
| \$ 0.292 | \$ (103) | \$ (42) | \$ 18 | \$ 79 | \$ 140 | \$ 200 | \$ 261 | \$ 322 | \$ 382 | \$ 443 | \$ 503 | \$ 564 | \$ 625 |
| \$ 0.304 | \$ (119) | \$ (58) | \$ 2 | \$ 63 | \$ 124 | \$ 184 | \$ 245 | \$ 306 | \$ 366 | \$ 427 | \$ 488 | \$ 548 | \$ 609 |

Worst Case

| | \$ 0.76 | \$ 0.89 | \$ 1.01 | \$ 1.14 | \$ 1.27 | \$ 1.39 | \$ 1.52 | \$ 1.65 | \$ 1.77 | \$ 1.90 | \$ 2.03 | \$ 2.15 | \$ 2.28 |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| \$ 0.101 | \$ 26 | \$ 34 | \$ 42 | \$ 50 | \$ 59 | \$ 67 | \$ 75 | \$ 83 | \$ 92 | \$ 100 | \$ 108 | \$ 116 | \$ 125 |
| \$ 0.114 | \$ 23 | \$ 31 | \$ 40 | \$ 48 | \$ 56 | \$ 64 | \$ 73 | \$ 81 | \$ 89 | \$ 97 | \$ 106 | \$ 114 | \$ 122 |
| \$ 0.127 | \$ 21 | \$ 29 | \$ 37 | \$ 45 | \$ 54 | \$ 62 | \$ 70 | \$ 78 | \$ 87 | \$ 95 | \$ 103 | \$ 111 | \$ 120 |
| \$ 0.139 | \$ 18 | \$ 26 | \$ 35 | \$ 43 | \$ 51 | \$ 59 | \$ 68 | \$ 76 | \$ 84 | \$ 92 | \$ 101 | \$ 109 | \$ 117 |
| \$ 0.152 | \$ 15 | \$ 24 | \$ 32 | \$ 40 | \$ 49 | \$ 57 | \$ 65 | \$ 73 | \$ 82 | \$ 90 | \$ 98 | \$ 106 | \$ 115 |
| \$ 0.165 | \$ 13 | \$ 21 | \$ 29 | \$ 38 | \$ 46 | \$ 54 | \$ 63 | \$ 71 | \$ 79 | \$ 87 | \$ 96 | \$ 104 | \$ 112 |
| \$ 0.177 | \$ 10 | \$ 19 | \$ 27 | \$ 35 | \$ 43 | \$ 52 | \$ 60 | \$ 68 | \$ 77 | \$ 85 | \$ 93 | \$ 101 | \$ 110 |
| \$ 0.190 | \$ 8 | \$ 16 | \$ 24 | \$ 33 | \$ 41 | \$ 49 | \$ 57 | \$ 66 | \$ 74 | \$ 82 | \$ 91 | \$ 99 | \$ 107 |
| \$ 0.203 | \$ 5 | \$ 14 | \$ 22 | \$ 30 | \$ 38 | \$ 47 | \$ 55 | \$ 63 | \$ 71 | \$ 80 | \$ 88 | \$ 96 | \$ 105 |
| \$ 0.215 | \$ 3 | \$ 11 | \$ 19 | \$ 28 | \$ 36 | \$ 44 | \$ 52 | \$ 61 | \$ 69 | \$ 77 | \$ 85 | \$ 94 | \$ 102 |
| \$ 0.228 | \$ 0 | \$ 9 | \$ 17 | \$ 25 | \$ 33 | \$ 42 | \$ 50 | \$ 58 | \$ 66 | \$ 75 | \$ 83 | \$ 91 | \$ 99 |
| \$ 0.241 | \$ (2) | \$ 6 | \$ 14 | \$ 23 | \$ 31 | \$ 39 | \$ 47 | \$ 56 | \$ 64 | \$ 72 | \$ 80 | \$ 89 | \$ 97 |
| \$ 0.254 | \$ (5) | \$ 4 | \$ 12 | \$ 20 | \$ 28 | \$ 37 | \$ 45 | \$ 53 | \$ 61 | \$ 70 | \$ 78 | \$ 86 | \$ 94 |
| \$ 0.266 | \$ (7) | \$ 1 | \$ 9 | \$ 18 | \$ 26 | \$ 34 | \$ 42 | \$ 51 | \$ 59 | \$ 67 | \$ 75 | \$ 84 | \$ 92 |
| \$ 0.279 | \$ (10) | \$ (2) | \$ 7 | \$ 15 | \$ 23 | \$ 32 | \$ 40 | \$ 48 | \$ 56 | \$ 65 | \$ 73 | \$ 81 | \$ 89 |
| \$ 0.292 | \$ (12) | \$ (4) | \$ 4 | \$ 12 | \$ 21 | \$ 29 | \$ 37 | \$ 46 | \$ 54 | \$ 62 | \$ 70 | \$ 79 | \$ 87 |
| \$ 0.304 | \$ (15) | \$ (7) | \$ 2 | \$ 10 | \$ 18 | \$ 26 | \$ 35 | \$ 43 | \$ 51 | \$ 60 | \$ 68 | \$ 76 | \$ 84 |

Wean-to-market average feed price (country \$/kg of feed)



LifeTide®SW5

• Contents

Each mL of LifeTide®SW5 Injectable Plasmid Encoding Porcine GHRH contains 2.5 mg Synthetic Porcine GHRH-encoding plasmid stabilized with 1% w/w Poly-L-Glutamate in sterile water.

• Indications

LifeTide®SW5 is a treatment for use in sows of breeding age to increase the number of piglets weaned. LifeTide®SW5 must only be used by, or under the direction of, a registered veterinary surgeon.

In a field study involving 483 treated sows and gilts and 488 control sows and gilts administration of LifeTide®SW5 during pregnancy increased the number of piglets weaned by at least 1 piglet per sow over three litters.

To maximize the benefit of LifeTide®SW5 it should only be used in healthy sows and gilts that are well fed and managed to avoid potentially confounding effects on weaning rates due to inadequate sow nutrition, ill health or poor hygiene.

• Dosage and Administration

The recommended dose of 2mL LifeTide®SW5 is injected intramuscularly prior to electroporation.

Sows/gilts must be under short-term light general anesthesia during administration and electroporation.

Inject 2mL LifeTide®SW5 into the muscle using a 3mL syringe and a 21 gauge, 2.0" needle. Using the CELLECTRA® device and a five electrode array electroporator head with the syringe needle inserted through the center port of the array, apply electroporation according to the manufacturer's instructions.

Any spilled product should be wiped up with appropriately diluted bleach and disposed of by incineration.

• Storage

Store below -18°C (Deep freeze). Allow to thaw at room temperature immediately before injection. Once thawed, unused vials and syringes may be stored for up to 6 months at 2 to 8°C (Refrigerate). Do not refreeze. After stopper penetration, product must be used within 24 hours.

• Restraints

DO NOT administer any aminoglycoside antibiotic for 7 days after treatment.

TO BE USED by, or under the direction of, a veterinary surgeon as a once in a lifetime treatment in sows under general anesthesia.



Plumblinē

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