

Claims

- 5 1. An injector device for delivery of components into the teat canal of a non-human animal comprising:-

a barrel for containing a first component;

10 an outlet nozzle configured for insertion into a teat canal at one end of the barrel;

an internal receptacle within the barrel for containing a second component to be injected into the teat canal;

15 a valve for separating the first component from the second component;

an activator for opening the valve to allow the second component to be released from the internal receptacle; and

20 a delivery means for delivery of a first component from the barrel, and, ^{on} ~~an~~ engagement of the valve with the activator to open the valve, sequential delivery of a second component from the internal receptacle through the outlet nozzle.

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~~2. An injector device as claimed in claim 1 wherein the valve comprises one or more passageways.~~

30 3. An injector device as claimed in claim 2 wherein the one or more passageways are opened when the valve is released for delivery of the second component through said one or more passageways.

- 4. ~~An injector device as claimed in any of claims 1 to 3 wherein the activator comprises at least one projecting member.~~
- 5. 5. An injector device as claimed in any of claims 1 to 4 wherein the activator is located in the barrel.
- 6. 6. An injector device as claimed in any of claims 1 to 5 wherein the activator is located adjacent to the outlet nozzle.
- 10. 7. An injector device as claimed in any of claims 1 to 6 wherein the activator comprises one or more passageways.
- 15. 8. An injector device as claimed in claims 1 to 7 wherein the activator is configured for engagement with the internal receptacle to provide a direct passageway for delivery of the second component from the internal receptacle into the outlet nozzle.
- 20. 9. An injector device as claimed in any of claims 1 to 8 wherein the delivery means comprises a plunger for the barrel.
- 25. 10. An injector device as claimed in any of claims 1 to 9 wherein the internal receptacle comprises an inner barrel located within an outer barrel of the injector.
- 30. 11. An injector device as claimed in claim 10 wherein the inner barrel is a close fit within the outer barrel.
- 12. ~~An injector device as claimed in any of claims 10 or 11 wherein the delivery means comprises the inner barrel.~~



- ~~13. An injector device as claimed in claims 10 to 12 wherein the inner barrel defines a plunger for the outer barrel.~~
- 14. An injector device as claimed in any of claims 10 to 13 wherein the delivery means comprises a plunger for the inner barrel.
- 15. An injector device as claimed in claims 10 to 14 wherein the inner barrel comprises engagement means for engagement with out outer barrel on assembly.
- 16. An injector device as claimed in claim 15 wherein the engagement means comprises an external seal.
- 17. An injector device as claimed in claim 15 or 16 wherein the outer barrel comprises engagement means for engagement with the inner barrel.
- 18. An injector device as claimed in claim 17 wherein the outer barrel comprises a locking ring for engagement with the inner barrel.
- 19. An injector as claimed in any of claims 10 to 18 wherein the inner barrel comprises engagement means for engagement with the plunger.
- 20. An injector device as claimed in claim 21 wherein the inner barrel comprises a locking ring for engagement with the plunger.
- 21. An injector device as claimed in any of claims 1 to 20 wherein the barrel contains a first component.
- 22. An injector device as claimed in claim 21 wherein the first component comprises an antimicrobial formulation.



- ~~23. An injector device as claimed in any of claims 1 to 22 wherein the internal receptacle contains a second component.~~
24. An injector device as claimed in claim 23 the second component comprises a seal formulation.
25. A device as claimed in claim 24 wherein the seal formulation comprises a non-toxic heavy metal salt.
26. A device as claimed in claim 25 wherein the seal formulation comprises greater than 40% by weight of the heavy metal salt.
27. A device as claimed in claim 25 or 26 wherein the seal formulation comprises between 50% and 75% by weight of the heavy metal salt.
28. A device as claimed in any of claims 25 to 27 wherein the seal formulation comprises approximately 65% by weight of the heavy metal salt.
29. A device as claimed in any of claims 25 to 28 wherein the heavy metal is bismuth.
30. A device as claimed in any of claims 25 to 29 wherein the heavy metal is bismuth.
31. A device as claimed in any of claims 25 to 30 wherein the seal formulation comprises a gel base.
- ~~32. A device as claimed in claim 31 wherein the base is a gel based on aluminium stearate.~~

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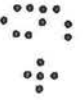
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- ~~33. A device as claimed in claim 31 or 32 wherein the gel base includes liquid paraffin as a vehicle.~~
- 5 34. A device as claimed in any of claims 22 to 33 wherein the antimicrobial is selected from any one or more of betalactam antibiotics, polymyxins, glycopeptides, aminoglycosides, lincosamides, macrolides, pleuromutilins, "fenicols" such as chloramphenicol and florfenicol, tetracyclines, sulphonamides and potentiated sulphonamides such as mixtures of trimethorpin and one or more sulphonamide, quinolones and fluorquinolones, 10 ionophores, coumarins such as novobiocin, natural or synthetic peptides, aminoglycosides, antimicrobial peptides or antimicrobials, lantibiotics, or other products of bacteria and other micro-organisms.
- 15 35. A device as claimed in claim 34 wherein the betalactam is selected from any one or more of penicillin, modified penicillin such as cloxacillin, amoxicillin, ampicillin, cephalosporins or beta lactam antibiotics potentiated by beta lactamase inhibitors such as clavulanic acid.
- 20 36. A device as claimed in claim 34 wherein the aminoglycoside is selected from any one or more of streptomycin, dihydrostreptomycin, neomycin, gentamycin, framycetin, aparamycin or kanamycin.
- 25 37. A device as claimed in any of claims 22 to 33 wherein the antimicrobial is selected from any one or more of macrolide, lincosamide or pleuromutilin, erythromycin, spiramycin, tylosin, spiramycin, tilmicosin, lincomycin, spectinomysin, pirlimycin or tiamulin.
- 30 38. An injector device as claimed in any of claims 1 to 37 wherein a first component is delivered from the barrel and a second component is subsequently delivered from the internal without substantial mixing of the ~~components.~~



~~39. An injector device substantially hereinbefore described with reference to Figs. 10 to 16 of the accompanying drawings.~~

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