**Supplementary Table 1: NCBI accession no. of FMDV Serotype O Isolates used in Phylogenetic analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Isolate | Accession No. | Name of Isolate | Accession No. |
| BAN/TG/Ba-268/2015 | KY077621.1 | **BAN/LA/Ad-278/2016** | KY077623.1 |
| BAN/TG/Ba-265/2015 | KY077620.1 | **BAN/KU/Fu-283/2016** | KY077624.1 |
| BAN/GA/Kk-192/2013 | KY077603.1 | **BAN/MG/Sa-294/2016** | KY077626.1 |
| BAN/NL/Lo-245/2015 | KY077611.1 | **BAN/TA/Dh-299/2016** | KY077627.1 |
| BAN/LK/Sa-248/2015 | KY077612.1 | **BAN/TA/Dh-301/2016** | KY077628.1 |
| BAN/LK/Sa-249/2015 | KY077613.1 | **BAN/GO/Ka-236(Pig)/2015** | KX712091.1 |
| BAN/NO/Be-250/2015 | KY077614.1 | **BAN/NA/Ha-156/2013** | KF985189.1 |
| BAN/NO/Be-251/2015 | KY077615.1 | **BAN/MG/Sa-287/2016** | KY077625.1 |
| BAN/DI/Sa-252/2015 | KY077616.1 | **BAN PA Kg-20 2012** | KJ175180.1 |
| BAN/DI/Sa-254/2015 | KY077617.1 | **BAN FA Do-12 2012** | KJ175179.1 |
| BAN/PG/At-262/2015 | KY077618.1 | **BAN LA Sa-137 2013** | KJ175182.1 |
| BAN/PG/At-264/2015 | KY077619.1 | **BAN/BO/Na-162/2013** | KY077601.1 |
| BAN/MA/Ku-269/2015 | KY077622.1 | **BAN/BO/Na-161/2013** | KY077600.1 |
| BAN LA Du-135 2013 | KJ175181.1 | **BAN JA Ma-180 2013** | KJ175183.1 |
| BAN/PA/Ch-228/2015 | KY077609.1 | **BAN/GA/Kk-191/2013** | KY077602.1 |
| BAN/DH/Dh-216/2015 | KY077608.1 | **BAN/GA/Ka-213/2014** | KY077606.1 |
| BAN TA Dh-186 2013 | KJ175185.1 | **BAN/GA/Ka-212/2014** | KY077605.1 |
| BAN/GA/Ka-215/2015 | KY077607.1 | **BAN TA Dh-184 2013** | KJ175184.1 |
| BAN/TA/Ma-200/2014 | KY077604.1 | **BAN/SI/Sh-234/2015** | KY077610.1 |
| BAN FA Do-11 2012 | KJ175178.1 | **BAN FA Kh-05 2012** | KC795947.1 |

**Supplementary Table 2: NCBI accession no. of FMDV Serotype A Isolates used in Phylogenetic analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Isolate | Accession No. | Name of Isolate | Accession No. |
| BAN/CH/Sa-304/2016 | MK088171 | **BAN\_CH\_Ra-08\_2012** | KC795949. 1 |
| BAN\_CH\_Ra-15\_2012 | KC795951.1 | **BAN/CH/Sa-302/2016** | KY077629 |
| BAN\_CH\_Ra-16\_2012 | KC795952.1 | **BAN CH Ra-28 2012** | KC795955.1 |
| BAN\_CH\_Ra-18\_2012 | KC795953.1 | **BAN CH Ra-26 2012** | KC795954.1 |
| BAN\_GA\_Sa-197\_2013 | KJ754939.1 | **BAN CH Ra-14 2012** | KC795950.1 |

**Supplementary Table-3: Immunization Plan of Experimental guinea pigs**

* Total no of GP: 49
* Body Weight: 300-450 gm
* Immunization Route: Subcutaneous
* Immunization Schedule:

Day 1 --- Primary immunization of all GP

 Day 14– Secondary (Booster) Immunization

Day 28 – Blood collection of all groups

|  |  |  |  |
| --- | --- | --- | --- |
| **Animal Group** | **Antigen Type/Conc.** | **No of GP** | **Total No. of Animals** |
| B1 | B3 |
| **Experimental Group (n=24; B1= 20; B3=20)** | 100 µg/dose | (A) 5 | (E) 5 | 10 |
| 50 µg/dose | (B) 5 | (F) 5 | 10 |
| 10 µg/dose | (C) 5 | (G) 5 | 10 |
| 2 µg/dose | (D) 5 | (H) 5 | 10 |
| **Control Group (n=9)** | Positive Control | Inactivated Type-O monovalent vaccine (BAN/DH/Dh-301/2016) | (X) 3 | 3 |
| Inactivated Type-A monovalent vaccine (BAN/CH/Sa-304/2016) | (Y) 3 | 3 |
| Negative Control | PBS with Montanide 201Vg | (Z) 3 | 3 |
| **Total No of Guinea Pig models** | 49 |

**Supplementary Table-4: Physicochemical parameters of B1 and B3**

|  |  |  |
| --- | --- | --- |
| Characteristics | B1 | B3 |
| MW (kDa) | 41.3 | 39.8  |
| Isoelectric Point (pI) | 7.75 | 8.51 |
| No. of Amino Acid | 390 | 383 |
| Recombinant protein solubility Prediction | 100.0 percent | 100.0 percent |
| Estimated half-life  | >10 hours (*E. coli*, in vivo)  | >10 hours (*E. coli*, in vivo) |





**Suppl. Figure 1: Wu-Kabat protein variability plot for VP1 type O and A circulating in Bangladesh. Variability was most observed at G-H loop [135-158] and C-termini [195-211] positions. (a) Variability plot of the whole VP1 protein of serotype O, (b) Variability plot of the whole VP1 protein of serotype A.**

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**Suppl. Figure-2: Map of pET 21a(+) expression vector with selectable marker**



**Suppl. Figure-3: Insertion sequences and amino acid sequences of B1 and B3.**



**Suppl. Figure-4: Ethical Clearance for the experiment (Ref:66/Biol. Sci./2018-19; Date: 14-11-2018)**