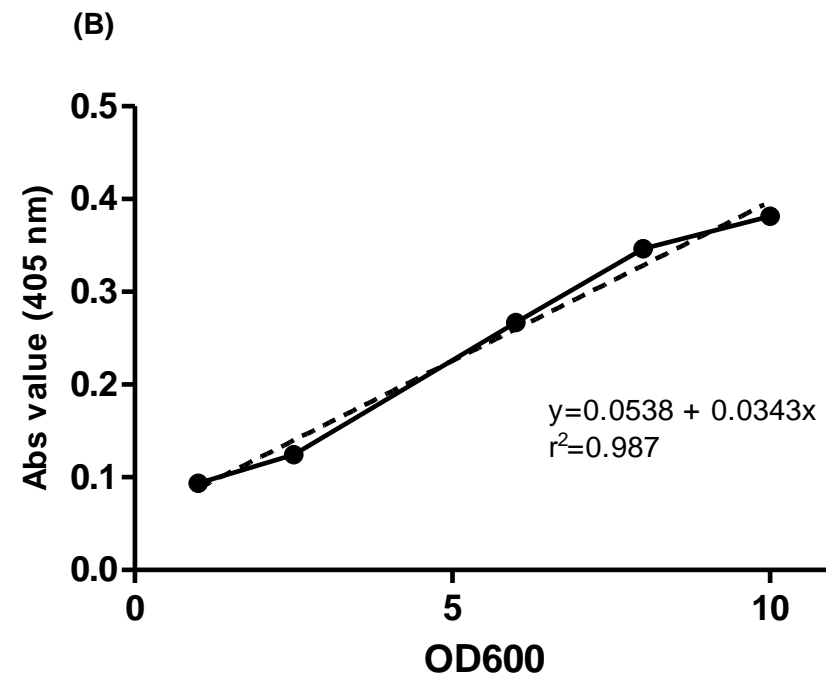
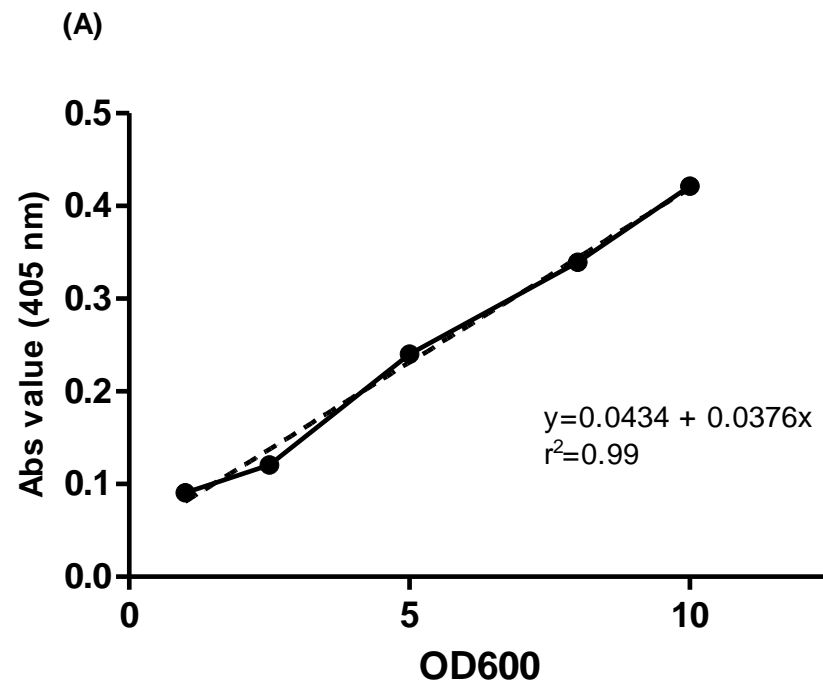


# Supplementary Data



**Figure S1.** Quantification of yeast surface display expressing antigen level values

(A) Expression level values of KHV coat protein yeast surface display and (B) RSIV coat protein yeast surface display with OD<sub>600</sub> value range at 1 to 10 were shown good correlation (with  $r^2$  value 0.99 and 0.987, respectively), whilst the OD<sub>600</sub> value at 2.5 has considered as the low amount for bio-panning due to near-low absorbance value. Both protein displaying yeast cells was harvested at 33 h post induction with the same manner of expression as protocol.

**C5** *NcoI*  
CCATGGCCGAGGTGCAGCTGTTGGAGTCTGGGGGAGGCTTGGTACAGCCTGGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTTAGCAGCTATGCCATGAGCTGG  
GTCCGCCAGGCTCCAGGGAAGGGGCTGGAGTGGGTCTCAAGTAGTGCTGCTCCTGGTAATGCGACATTTTACGCAGACTCCGTGAAGGGCCGGTTACCATCTCCAGAGACAATTCC  
AAGAACACGCTGTATCTGCAAATGAACAGCCTGAGAGCCGAGGACACGGCCGTATATTACTGTGCGAAAGCTAGGGTGGCGTTTGACTACTGGGGCCAGGGAACCCTGGTCACCGTC  
TCGAGCGGTGGAGGCGGTTTCAGGCGGAGGTGGCAGCGGCGGTGGCGGGTTCGACGGACATCCAGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCA  
TCACTTGCCGGGCAAGTCAGAGCATTAGCAGCTATTTAAATTGGTATCAGCAGAAACCAGGGAAAGCCCCTAAGCTCCTGATCTATACGGCATCCTATTTGCAAAGTGGGGTCCCATCA  
AGGTTCAGTGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGTCTGCAACCTGAAGATTTTGCAACTTACTACTGTCAACAGTCTGAGTGGCTTCCTATGACGTTCGGCCA  
AGGGACCAAGGTGGAATCAAACCGGGCGGCCGC  
*NotI*

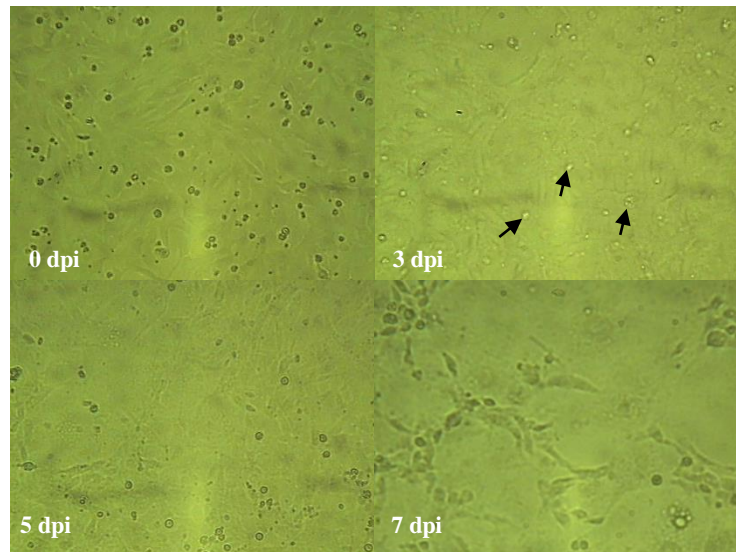
**E4** *NcoI*  
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GTCCGCCAGGCTCCAGGGAAGGGGCTGGAGTGGGTCTCAAGTATTCCGAAGCTTGGTTCTAAGACATGCTTCGCAGACTCCGTGAAGGGCCGGTTACCATCTCCAGAGACAATTCC  
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TCGAGCGGTGGAGGCGGTTTCAGGCGGAGGTGGCAGCGGCGGTGGCGGGTTCGACGGACATCCAGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCA  
TCACTTGCCGGGCAAGTCAGAGCATTAGCAGCTATTTAAATTGGTATCAGCAGAAACCAGGGAAAGCCCCTAAGCTCCTGATCTATAAGGCATCCAATTTGCAAAGTGGGGTCCCATCA  
AGGTTCAGTGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGTCTGCAACCTGAAGATTTTGCGACTTACTACTGTCAACAGCCTCCGCGTCGTCCTCGGACGTTTCGGCC  
AAGGGACCAAGGTGGAATCAAACCGGGCGGCCGC  
*NotI*

**F6** *NcoI*  
CCATGGCCGAGGTGCAGCTGTTGGAGTCTGGGGGAGGCTTGGTACAGCCTGGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTTAGCAGCTATGCCATGAGCTGG  
GTCCGCCAGGCTCCAGGGAAGGGGCTGGAGTGGGTCTCAAAGATTGCGGCGAATGGTGTGCAGACAGATTACGCAGACTCCGTGAAGGGCCGGTTACCATCTCCAGAGACAATTCC  
CAAGAACACGCTGTATCTGCAAATGAACAGCCTGAGAGCCGAGGACACGGCCGTATATTACTGTGCGAAACTTGCTCGGTTGTTTGACTACTGGGGCCAGGGAACCCTGGTCACCGT  
CTCGAGCGGTGGAGGCGGTTTCAGGCGGAGGTGGCAGCGGCGGTGGCGGGTTCGACGGACATCCAGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACC  
ATCACTTGCCGGGCAAGTCAGAGCATTAGCAGCTATTTAAATTGGTATCAGCAGAAACCAGGGAAAGCCCCTAAGCTCCTGATCTATCCTGCATCCTATTTGCAAAGTGGGGTCCCATC  
AAGGTTCAGTGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGTCTGCAACCTGAAGATTTTGCAACTTACTACTGTCAACAGCCTGATTTGCCGCCTGGTACGTTTCGGCC  
AAGGGACCAAGGTGGAATCAAACCGGGCGGCCGC  
*NotI*

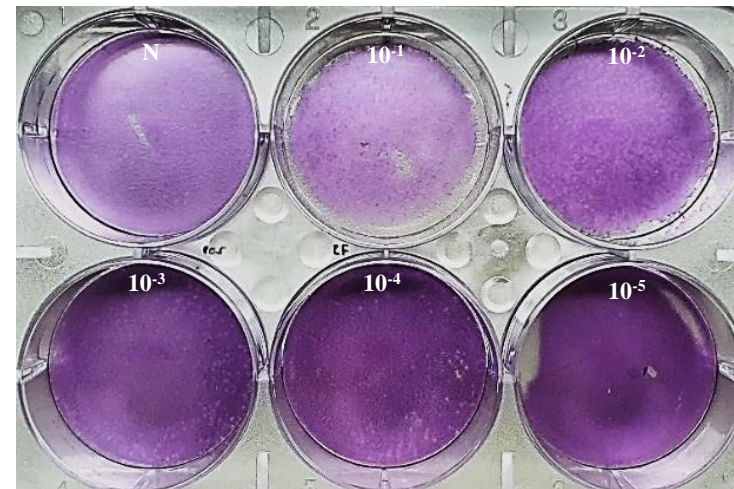
**F8** *NcoI*  
CCATGGCCGAGGTGCCGCTGTTGGAGTCTGGGGGAGGCTTGGTACAGCCTGGGGGGTCCCTGAGACTCTCCTGTGCAGCCTCTGGATTACCTTTAGCAGCTATGCCATGAGCTGG  
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TCGAGCGGTGGAGGCGGTTTCAGGCGGAGGTGGCAGCGGCGGTGGCGGGTTCGACGGACATCCAGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCA  
TCACTTGCCGGGCAAGTCAGAGCATTAGCAGCTATTTAAATTGGTATCAGCAGAAACCAGGGAAAGCCCCTAAGCTCCTGATCTATCCTGCATCCCATTGCAAAGTGGGGTCCCATC  
AAGGTTCAGTGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGTCTGCAACCTGAAGATTTTGCAACTTACTACTGTCAACAGACTCGTGTTTCATCCTCCTACGTTTCGGCC  
AAGGGACCAAGGTGGAATCAAACCGGGCGGCCGC  
*NotI*



**Figure S2.** Nucleic acid sequence of putative anti-KHV scFv



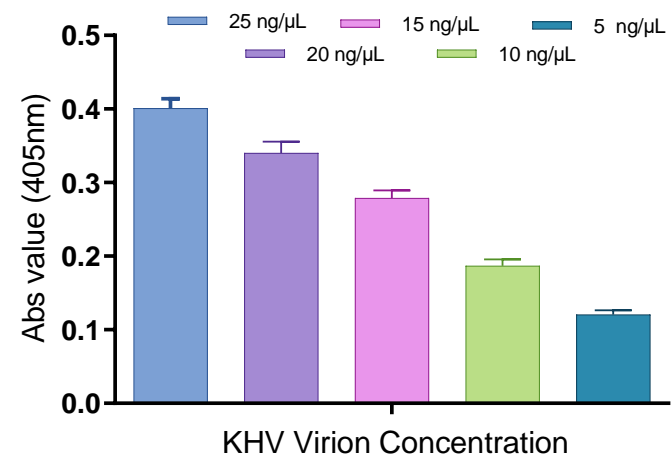
(A)



(B)

**Figure S3. KHV virion propagation and titer assay**

(A) The observation morphological change of CCB cell line after KHV virion infection. First vacuolic enlargement of the cells was appeared at 3 days post infection (dpi) (shown by arrow) and start developing to maximum at 7 days post infection (dpi). (B) A viral titer assay was performed by plaque assay using agarose overlay media. The visible plaque was measured at 10<sup>-4</sup> dilution and back calculated the viral titer.



**Figure S4.** Purified KHV virion quantification

Purified KHV virion determination using anti-KHV monoclonal antibody (1 : 1,000) and Anti-Mouse HRP (1 : 1,000).



**Figure S5. F6 and C5 scFv protein characterization**

(A) Western blot data of purification confirmation of each elution step using CptoL with sample from T = Total (filtered media + periplasmic fraction), FT = Flow through, W1 = Washing 1 elute (Binding buffer), W2 = Washing 2 elute (Citrate + Glycine pH 3.5 buffer), P = purified protein (elution buffer). (B) Coomassie staining of purified C5 and F6 compare to BSA protein control (10 to 100 ng/μL), shows that F6 has higher amount compare to C5 per 1L LB medium.