

Supplementary Material

Supplementary Table S1: Endotoxin level of the *Salmonella paratyphi* A nanovaccines.

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Sample ID	Endotoxin (EU/mL)
PBS	7.5±0.007
NP(LTIB)-OPS _{SPA}	16.7±0.011
NP(LTIIbB)-OPS _{SPA}	23.6±0.004

Supplementary Table S2: Endotoxin level of the *Shigella flexneri* 2a nanovaccines.

Table S3: Endotoxin level of the *Shigella flexneri* 2a nanovaccines.

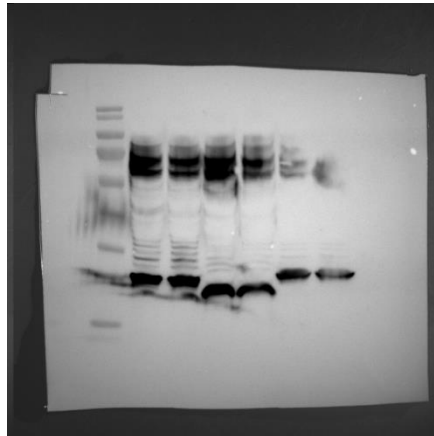
Sample ID	Endotoxin (EU/mL)
NP(LTIB)-OPS _{Kp}	18.5±0.003
NP(LTIIbB)-OPS _{Kp}	22.7±0.005

Supplementary Table S3: Endotoxin level of the *Klebsiella pneumoniae* O2 serotype nanovaccines.

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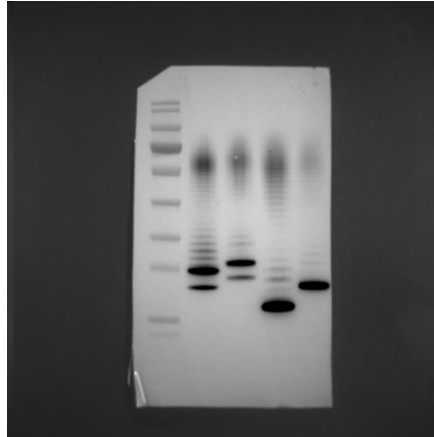
Sample ID	Endotoxin (EU/mL)
NP(LTIB)-OPS _{Sf}	22.8±0.006
NP(LTIIbB)-OPS _{Sf}	22.5±0.016

Supplementary Figure S1: The whole blot (uncropped blots) of Figure 1B.



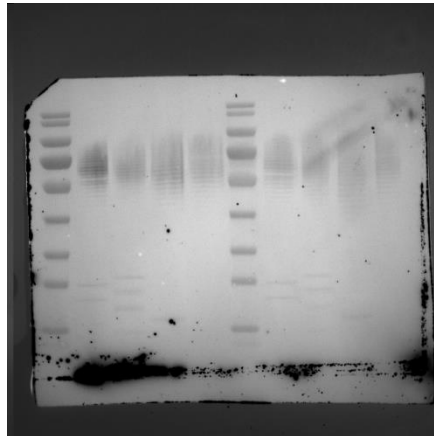
Analysis of the glycoproteins by HRP-conjugated anti-6 \times His tag antibodies. From left to right, lane 1 is a protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 5 is 50973DWL/LT2 containing the plasmid pPglL-LTIIBTri with IPTG induction, and the integrated density of bands was 37864.236. Lane 6 is 50973DWL/LT2 containing the plasmid pPglL-LTIBTri with IPTG induction, and the integrated density of bands was 19630.555. Other lanes were not relevant to this study.

Supplementary Figure S2: The whole blot (uncropped blots) of Figure 1E.



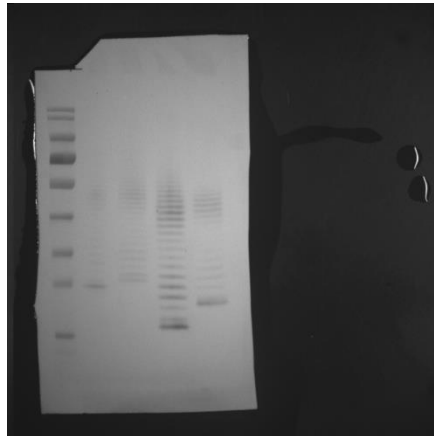
Analysis of the glycoproteins by HRP-conjugated anti-6 \times His tag antibodies. From left to right, lane 1 is a protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa, lane 3 is glycoprotein LTIBTri-OPS_{SPA} and lane 5 is glycoprotein LTIIbBTri-OPS_{SPA} were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using HRP-conjugated anti-6 \times His tag antibodies. The integrated density of bands was 24534.884 and 16297.789 respectively. Other lanes were not relevant to this study.

Supplementary Figure S3: The whole blot (uncropped blots) of Figure 1E.



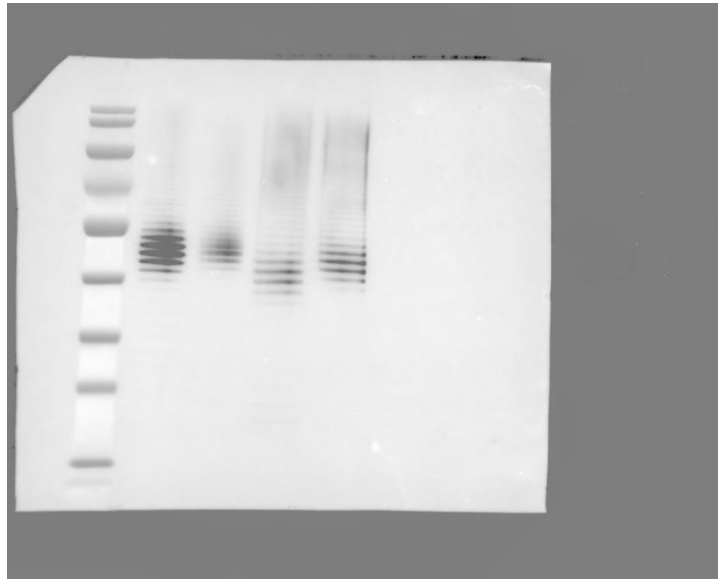
From left to right, lane 6 is protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 8 is glycoprotein LTIBTri-OPS_{SPA} and lane 10 is glycoprotein LTIIbBTri-OPS_{SPA} were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using rabbit anti *S. paratyphi* A CMCC strain 50973 OPS serums. The integrated density of bands was 34141.458 and 182241.919 respectively. Other lanes were not relevant to this study.

Supplementary Figure S4: The whole blot (uncropped blots) of Figure 5A.



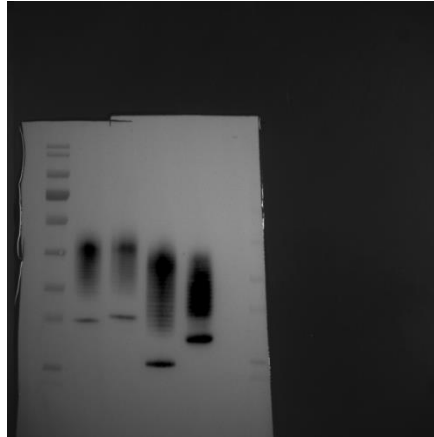
From left to right, lane 1 is protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 3 is nanovaccines NP(LTIB)-OPS_{Sf} and lane 5 is nanovaccines NP(LTIIbB)-OPS_{Sf} pellets were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using HRP-conjugated anti-6×His tag antibodies. The integrated density of bands was 11452.294 and 19275.092 respectively. Other lanes were not relevant to this study.

Supplementary Figure S5: The whole blot (uncropped blots) of Figure 5A.



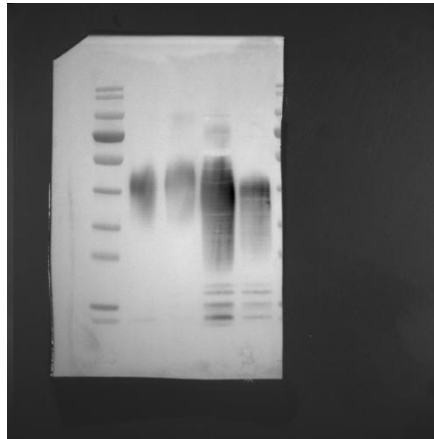
From left to right, lane 1 is protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 3 is nanovaccines NP(LTIB)-OPS_{Sf} and lane 5 is nanovaccines NP(LTIIbB)-OPS_{Sf} pellets were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using rabbit anti *S. flexneri* 2a strain 301 OPS serums. The integrated density of bands was 27389.052 and 33547.449 respectively. Other lanes were not relevant to this study.

Supplementary Figure S6: The whole blot (uncropped blots) of Figure 5B.



From left to right, lane 1 is protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 3 is nanovaccines NP(LTIB)-OPS_{Kp} and lane 5 is nanovaccines NP(LTIIbB)-OPS_{Kp} pellets were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using HRP-conjugated anti-6×His tag antibodies. The integrated density of bands was 25603.516 and 77435.014 respectively. Other lanes were not relevant to this study.

Supplementary Figure S7: The whole blot (uncropped blots) of Figure 5B.



From left to right, lane 1 is protein ladder - from top to bottom - 140, 115, 80, 65, 50, 40, 30, 25, 15, 10 kDa. Lane 3 is nanovaccines NP(LTIB)-OPS_{Kp} and lane 5 is nanovaccines NP(LTIIbB)-OPS_{Kp} pellets were separated by SDS-PAGE and transferred to nitrocellulose membranes for Western Blot analysis using rabbit anti *K. pneumoniae* strain 355 OPS serums. The integrated density of bands was 14625.688 and 26009.597 respectively. Other lanes were not relevant to this study.