

**Title**

Augmented clearance of nivolumab is associated with renal functions in chronic renal disease model rats

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**Supplement Table 1**

Optimal MRM condition.

Matrix	Drug	Selected peptide	Transition mass filter [m/z]	Q1 [V]	Collision [V]	Q3 [V]
Urine	Nivolumab	ASGITFSNSGMHWVR	532.9 > 838.2	-24	-18	-24
	IS(Trastuzumab)	FTISADTSK	485.2 > 721.1	-18	-17	-34
Plasma	Nivolumab	ASQSVSSYLAWYQQKPGQAPR	785.0 > 940.6	-34	-26	-34
	IS(Trastuzumab)	IYPTNGYTR	543.3 > 404.8	-40	-16	-14

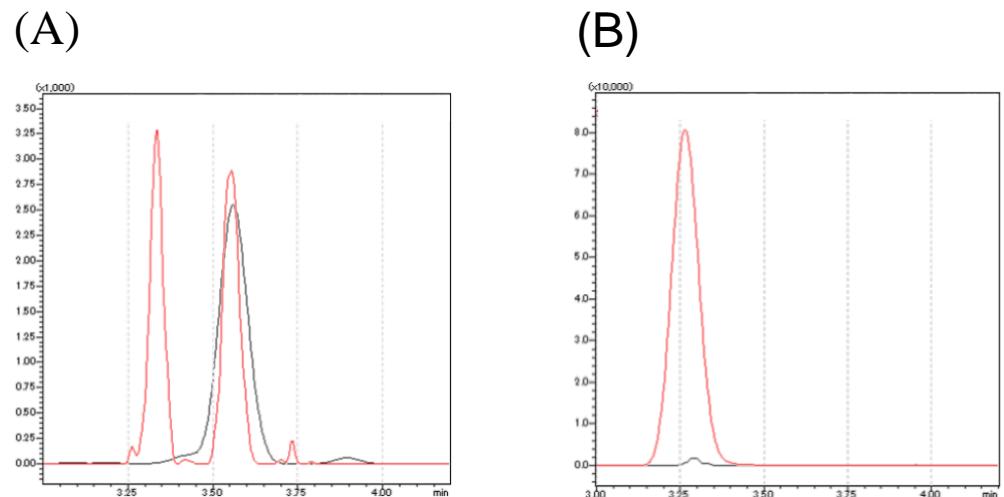
**Supplement Table 2.**

Intra-day reproducibility of rat urine.

Liner: 0.1 – 25 µg/mL

Urine ( n = 5 )			
Nivolumab (µg/mL)	Mean ± SD	Accuracy (%)	CV (%)
0.1	0.11 ± 0.012	109.2	11.1
0.25	0.26 ± 0.022	103.6	8.3
7.5	7.39 ± 0.527	98.6	7.1
20	22.9 ± 1.62	114.4	7.1

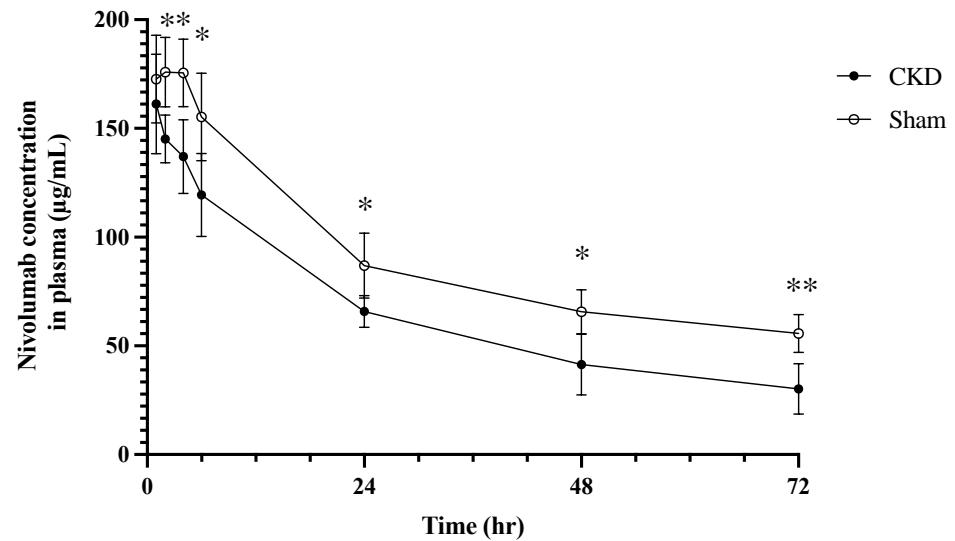
**Supplement Figure 1.**



Overlay of MRM chromatograms of nivolumab and trastuzumab surrogate peptides.

(A) is nivolumab: LLIYDASNR ( $m/z : 532.9 > 838.2$ ), (B) is trastuzumab : FTISADTSK ( $m/z : 485.2 > 721.1$ ) The black line is blank urine sample. The red line is 0.1 $\mu$ g/mL nivolumab urine sample with IS spiked.

**Supplement Figure 2.**



The linear plot of the time course for plasma concentration of nivolumab.  $n = 6$  for CKD model and  $n = 5$  for Sham rats at various time points

Data were analyzed with unpaired t test. \*  $P < 0.05$ , \*\* $P < 0.01$