

## Supplementary Data 2. Shear wave elastography (SWE) results in the preliminary study

### 1. Preliminary study

- Purpose: (1) to establish the rat liver SWE procedures  
(2) to determine TAA dose for rat liver fibrosis model
- Rats: 11 rats with 0 (n=1), 100 (n=3), 150 (n=2), 200 (n=3), 250 mg/kg (n=2) of TAA
- Histology: A dose of 100 mg/kg did not induce liver fibrosis consistently, and a dose of 250 mg/kg resulted in death of all rats during the TAA medication period.

### 2. The first SWE session

- Purpose: to set up the SWE procedures in ultrasound machine
- Rats: one normal rat
- Liver stiffness measurement: One kPa value per sampling box, total 8 times per attempt

Liver fibrosis 1 <sup>st</sup> pilot US data								
Rat	Radiologist				Radiographer			
	Liver stiffness		SD		Liver stiffness		SD	
	kPa	m/s	SD kPa	SD m/s	kPa	m/s	SD kPa	SD m/s
Rat 1 (normal)	7.4	1.57	2.2	0.23	8.3	1.67	1.7	0.18
	12	1.96	4.6	0.44	9.3	1.74	4.1	0.34
	9.4	1.78	1.9	0.18	8.1	1.64	3.3	0.32
	7.4	1.57	2.2	0.23	8.5	1.67	2.6	0.24
	9.7	1.76	4.6	0.38	6.4	1.47	1.4	0.16
	5.8	1.39	2.1	0.24	9.9	1.65	12.1	0.74
	8.7	1.69	3.4	0.31	8.8	1.7	3.3	0.31
	11.5	1.89	4.6	0.47	9.4	1.76	3.1	0.27

### 3. The second SWE session

- Purpose: to measure the liver stiffness in 9 rats
- Rats according to TAA administration dose:  
1 rat (0 mg), 3 rats (100 mg), 2 rats (150 mg), 3 rats (200 mg)

Liver fibrosis 2 <sup>nd</sup> pilot US data								
Rat	Radiologist				Radiographer			
	Liver stiffness		SD		Liver stiffness		SD	
	kPa	m/s	SD kPa	SD m/s	kPa	m/s	SD kPa	SD m/s
Rat 2 (0 mg)	9.3	1.73	3.8	0.33	6.1	1.43	1.7	0.2
	8.1	1.65	2.3	0.22	7.1	1.53	2.2	0.25
	8.4	1.64	4.1	0.38	8.8	1.61	6.3	0.55

	6.6	1.43	3.5	0.41	7.3	1.5	3.2	0.37
	7.6	1.52	3.1	0.42	8.2	1.65	3	0.29
	5.3	1.25	2.1	0.35	6.7	1.48	2.9	0.3
	8.9	1.6	3.5	0.5	9.8	1.75	3.9	0.42
	9.9	1.72	6.1	0.51	9.4	1.69	5.2	0.52
Rat 3 (100 mg)	10.2	1.85	2.1	0.19	11.2	1.93	2.1	0.18
	11.8	1.99	2.3	0.19	10.7	1.89	1.8	0.15
	11.7	1.98	2	0.16	11.4	1.94	3.1	0.24
	18.7	2.46	7.7	0.48	10.2	1.85	2.2	0.2
	10.3	1.79	5	0.48	12.7	1.97	6.1	0.48
	14.7	1.76	15.3	1	11.5	1.85	7.2	0.58
	11.7	1.94	4.9	0.39	10.8	1.89	2.8	0.24
	9.3	1.72	5	0.43	13.6	2.1	5.2	0.39
Rat 4 (100 mg)	9	1.67	5.8	0.5	10.1	1.8	5.7	0.44
	10.2	1.83	3.6	0.31	8	1.64	2.1	0.19
	8	1.63	2.6	0.25	9.6	1.77	3.4	0.31
	10.2	1.81	4.1	0.4	9.3	1.76	2.7	0.24
	8.3	1.48	10.1	0.6	6.1	1.42	2.1	0.26
	7.9	1.62	3.3	0.28	10.3	1.82	4.4	0.38
	6.8	1.5	2.8	0.28	8	1.62	3.5	0.34
	6.7	1.51	1.3	0.14	6.7	1.51	1.8	0.19
Rat 5 (100 mg)	NA				10.4	1.84	3.5	0.3
					11.6	1.95	4.3	0.36
					10.3	1.76	4	0.46
					14.3	2.06	8.3	0.61
					11	1.89	4.7	0.38
					13.7	2.09	6.3	0.46
					9	1.71	4.2	0.38
					10.4	1.83	3.3	0.35
Rat 6 (150 mg)	10	1.8	3.5	0.29	9.3	1.75	2.6	0.23
	16.5	2.29	6.8	0.48	10.1	1.83	2.9	0.26
	16.5	2.31	5.2	0.36	7.9	1.63	1.7	0.16
	13.7	2.1	6	0.37	10.4	1.86	2.9	0.24
	11.3	1.91	4.6	0.39	10	1.81	3.5	0.31
	16.3	2.29	6.4	0.44	14	2.12	6.3	0.45
	13.5	2.07	7.5	0.5	11.6	1.92	5.5	0.48
	11.5	1.91	3.7	0.36	12.6	2.01	5.6	0.43
Rat 7 (150 mg)	11.9	1.99	3.2	0.25	14.2	2.1	5.6	0.5
	13	2.06	4.3	0.36	10.7	1.85	4.3	0.38
	12.5	2.03	4.3	0.32	10.8	1.88	3.4	0.29

	12.3	2	4.5	0.36	9.5	1.71	4.8	0.43
	9.6	1.78	3.3	0.28	11.7	1.96	3.8	0.3
	16.4	2.31	5	0.35	15.2	2.23	4.8	0.34
	14.7	2.12	5.6	0.49	12.6	2.02	5.1	0.41
	14.4	2.09	8.4	0.63	12.5	1.86	5.9	0.64
Rat 8 (200 mg)	11.9	1.88	8.4	0.67	13.4	2.08	3.7	0.3
	17.9	2.42	5.6	0.38	12.8	2.07	2.2	0.18
	13.8	2.11	5.2	0.39	9.6	1.78	2.3	0.23
	15.2	2.02	11.8	0.83	10.3	1.8	5.6	0.46
	12.6	2.02	4.9	0.4	12.5	1.86	3.9	0.34
	13.9	2.12	5.1	0.38	11.7	1.96	4.9	0.44
	10.6	1.81	4.7	0.48	10.3	1.85	3.2	0.29
	15.4	2.25	3.9	0.28	12.5	1.86	3.1	0.24
Rat 9 (200 mg)	14.3	2.18	3.7	0.28	9.4	1.75	3.7	0.32
	10.3	1.85	2.8	0.26	10.7	1.88	3.4	0.29
	8.1	1.65	1.3	0.13	15.4	2.21	9.6	0.53
	13.8	2.04	6.9	0.55	13.2	2.06	6.9	0.45
	14.6	2.18	4.3	0.31	14.8	2.2	4.8	0.32
	16.7	2.32	6.6	0.4	13.4	2.08	5.5	0.4
	12.7	2.05	3.5	0.27	8.5	1.69	1	0.1
	12.6	1.81	7.6	0.74	11.3	1.92	4.4	0.35
Rat 10 (200 mg)	NA				12.4	1.99	4.3	0.42
					11.5	1.92	4.9	0.4
					11.9	1.97	4.3	0.34
					17.1	2.34	4.7	0.43
					13.1	2.06	4.8	0.39
					11.1	1.9	4.1	0.34
					11.6	1.92	4.8	0.41
					12.6	2.02	1.7	0.16

#### 4. Inter-reader variability in liver stiffness values

- **Reader 1:** a radiologist who was no prior experience in rat ultrasonography (Novice)
- **Reader 2:** a radiographer who was experienced in rat ultrasonography (Expert)
- **Inter-reader variability:** Reader 2 (Expert) yielded more reliable results than reader 1 (Novice) in that the coefficient of variation (CoV), a measure of variability in a group, was higher in the reader 1 than the reader 2 ( $P < 0.05$ ).

Rat (TAA dose)	Radiologist		Radiographer	
	Median (kPa)	IQR/Median	Median (kPa)	IQR/Median
Rat 1 (normal)	9.05	0.3038	8.65	0.1242
Rat 2 (0 mg)	8.25	0.2606	7.75	0.2516
Rat 3 (100 mg)	11.7	0.1923	11.3	0.0907
Rat 4 (100 mg)	8.15	0.2055	8.65	0.2369
Rat 5 (100 mg)	NA	NA	10.7	0.1635
Rat 6 (150 mg)	13.6	0.3272	10.25	0.1975
Rat 7 (150 mg)	12.75	0.1941	12.1	0.1838
Rat 8 (200 mg)	13.85	0.1696	12.1	0.188
Rat 9 (200 mg)	13.25	0.2415	12.25	0.2755
Rat 10 (200 mg)	NA	NA	12.15	0.0946
Mean	11.325	0.237	10.590	0.181
SD	2.454	0.057	1.699	0.064
CoV	0.217	0.240	0.160	0.353