



**Fig. S1. Changes of liver function in acute liver failure mice induced by D-GalN/LPS.** Male C57BL/6 mice were injected with Wy-14643 (6 mg/kg) 2 h prior to D-GalN (700 mg/kg) and LPS (10 μg/kg) treatment (n=12). Mice were pre-treated with 4-PBA (100 mg/kg) by intraperitoneal injection 6 h prior to the D-GalN/LPS treatment (n=14). Mice were pre-treated with PPARα siRNA (50 μM/kg) or control siRNA (50 μM/kg) via tail vein injection and then further injected with 4-PBA, 24 h and 6 h prior to D-GalN/LPS treatment (n=14/group). The mice were euthanized 6 h after D-GalN/LPS treatment, and the serum samples were collected. Liver function showed significantly lower alkaline phosphatase (ALP), total bilirubin (TBIL) and prothrombin time (PT) in the Wy-14643 or 4-PBA pre-treatment group compared with the D-GalN/LPS administration group. However, the liver function showed that this hepatic protection by 4-PBA in the ALF was abolished by knockdown of PPARα, which was evidenced by the significantly higher levels of ALP and TBIL (#:  $p < 0.05$ , \*:  $p < 0.01$ ).

**Table S1. General clinical characteristics of the different study groups**

|  | Normal subjects<br>(n = 8) | Chronic hepatitis B<br>patients (n = 12) | Acute liver failure<br>patients (n = 12) | P value |
|--|----------------------------|--|--|---------|
| Age(years)                                 | 39.4±3.6                   | 32.4±4.1                                 | 41.6±5.3                                 | 0.11    |
| Gender<br>(male/female)                    | 6/2                        | 7/5                                      | 8/4                                      | 0.437   |
| Alanine<br>aminotransferase(U/L)           | 35.1±6.1                   | 93.3±18.3                                | 210.4±76.3                               | 0.026   |
| aspartate<br>aminotransferase(U/L)         | 30.6±3.9                   | 62.6±15.4                                | 305.8±44.6                               | 0.038   |
| Serum<br>bilirubin(μmol/l)                 | 8.8±2.9                    | 20.9±6.3                                 | 196.1±50.6                               | 0.01    |
| Prothrombin time(s)                        | 9±2.4                      | 15±5.2                                   | 34.4±7.2                                 | 0.022   |
| Albumin(g/L)                               | 46.2±6.9                   | 32.6±10.8                                | 26.7±5.7                                 | 0.039   |
| Creatinin(μmol/L)                          | 73.6±21.5                  | 80.1±29.0                                | 95.4±32.8                                | 0.042   |
| Hepatic<br>encephalopathy score            | —                          | —  | 1.7±0.3                                  | —       |
| Child-Pugh score                           | —                          | 6±0.6                                    | 13.7±2.4                                 | 0.031   |
| Model for End-stage<br>Liver Disease score | —                          | —  | 28.2±4.2                                 | —       |
| HBsAg test                                 | —                          | positive                                 | positive                                 | —       |
| HBV DNA(log <sub>10</sub><br>copy/ml)      | —                          | 4.5±1.02                                 | 4.1±1.54                                 | 0.232   |

**Table S2. Changes of liver function in acute liver failure mice induced by D-GalN/LPS**

| Groups                         | ALB(g/L)   | ALP(IU/L)   | TBIL (μmol/L) | PT(Sec)   |
|--------------------------------|------------|-------------|---------------|-----------|
| Controls                       | 34.55±2.65 | 98.36±10.7  | 0.79±0.14     | 10.1±1.0  |
| D-GalN/LPS                     | 29.27±1.66 | 298.4±21.1  | 65.14±6.09    | 22.8±3.2  |
| Wy-14643+D-GalN/LPS            | 30.11±3.15 | 133.7±16.6* | 12.91±1.22*   | 15.6±1.6* |
| 4-PBA+D-GalN/LPS               | 31.54±3.27 | 98.5±10.6   | 26.40±5.24    | 12.6±1.5  |
| Control siRNA+4-PBA+D-GalN/LPS | 31.99±4.01 | 100.2±20.1  | 28.34±4.44    | 13.1±3.2  |
| PPARα siRNA+4-PBA + D-GalN/LPS | 30.21±4.29 | 176.2±33.7# | 50.47±6.21#   | 15.8±6.6  |

Note: D-GalN/LPS vs Wy-14643+D-GalN/LPS, \*: P<0.05;

Control siRNA+4-PBA+D-GalN/LPS vs PPARα siRNA+4-PBA + D-GalN/LPS, #: P<0.05;