SUPPLEMENTARY DATA

Methods

Serum test

ALT: 5μL of serum was placed in a 96-well plate and mixed with 20μL of matrix solution. After reaction at 37ºC for 30 min, 20μL of 2,4-dinitrophenylhydrazine solution was added. After mixing, the reaction was performed at 37ºC for 20 min and then 200μL of 0.4mol/L sodium hydroxide solution was added to mix well, placed at room temperature for 15 min and finally placed on a micro plate reader to detect $OD_{505\ nm}$. The absolute OD value was brought into the standard curve to obtain the ALT activity value.

ALT activity (U/L) = Substitute into the standard curve to obtain ALT activity (Carmen's unit) × 0.482.

AST: 5μL of serum was placed in a 96-well plate, and 20μL of reagent 1 was added to mix well. After 30 min of reaction at 37ºC, 20μL of reagent 2 was added. After mixing, the reaction was carried out at 37ºC for 20 min, and then 200μL of 0.4mol/L sodium hydroxide solution was added. Mix well, place it at room temperature for 15 min and finally place it on a micro plate reader to detect $OD_{510\ nm}$ and bring the absolute OD value into the standard curve to obtain the AST activity value.

AST activity (U/L) = Substitute into the standard curve to obtain AST activity (Carmen's unit) × 0.482.

BUN: 20μL of double distilled water, urea nitrogen standard and serum were placed in a 2.5 mL centrifuge tube, respectively. Then 1 mL of reagent one and reagent two were added in turn, mixed well, placed in boiling water for accurate water bath for 15 min, taken out and cooled with tap water, mixed well and finally 200μL was added to a 96-well plate and placed on a micro plate reader to detect $OD_{520\ nm}$.

$BUN\ (mmol/L) = C_{standard} \times (OD_{determination} - OD_{blank}) / (OD_{standard} - OD_{blank})$

Cre: 6μL of double distilled water, standard and serum were placed in 96-well plates, respectively. Then 180μL of enzyme solution A was added and incubated at 37ºC for 5 min. The $OD_{546\ nm}$ was detected on the micro plate reader and recorded as A1. Then 60μL of enzyme solution B was added and incubated at 37ºC for 5 min. The $OD_{546\ nm}$ was detected on the micro plate reader and recorded as A2. ΔA = A2- (186 / 246) A1

$Cre\ (\mu mol/L) = C_{standard} \times (\Delta A_{determination} - \Delta A_{blank}) / (\Delta A_{standard} - \Delta A_{blank})$

TC: 2.5μL of double distilled water, standard and serum were placed in 96-well plates, respectively. Then 250μL of working solution was added, mixed, incubated at 37ºC for 20 min, and finally placed on a micro plate reader to detect $OD_{500\ nm}$.

$TC\ (mmol/L) = C_{standard} \times (OD_{determination} - OD_{blank}) / (OD_{standard} - OD_{blank})$

TG: 2.5μL of double distilled water, standard and serum were placed in 96-well plates, respectively. Then 250μL of working solution was added, mixed, incubated at 37ºC for 20 min, and finally placed on a micro plate reader to detect $OD_{500\ nm}$.

$TG\ (mmol/L) = C_{standard} \times (OD_{determination} - OD_{blank}) / (OD_{standard} - OD_{blank})$

HDL-c: 4μL of double distilled water, standard substance and serum were placed in a 96-well plate, respectively. Then 150μL of reagent one and 50μL of reagent two were added, mixed, incubated at

37□ for 30 min, and finally placed on a micro plate reader to detect $OD_{500\ nm}$.
HDL-c (mmol/L) = $C_{standard} \times (OD_{determination}-OD_{blank}) / (OD_{standard}-OD_{blank})$

LDL-c: 4μL of double distilled water, standard substance and serum were placed in a 96-well plate, respectively. Then 150μL of reagent one and 50μL of reagent two were added, mixed, incubated at 37℃ for 30 min and finally placed on a micro plate reader to detect $OD_{500\ nm}$.
LDL-c (mmol/L) = $C_{standard} \times (OD_{determination}-OD_{blank}) / (OD_{standard}-OD_{blank})$

FFA: 4μL of double distilled water, standard and serum were placed in 96-well plates, respectively. Then 200μL of reagent 1 was added, mixed, incubated at 37ºC for 5 min and $OD_{546\ nm}$ was detected on the micro plate reader, recorded as A1. Then 50μL of reagent two was added and incubated at 37ºC for 5 min. The $OD_{546\ nm}$ was detected on the micro plate reader and recorded as A2. ΔA = A2-A1
FFA (mmol/L) = $C_{standard} \times (\Delta A_{determination} - \Delta A_{blank}) / (\Delta A_{standard} - \Delta A_{blank})$