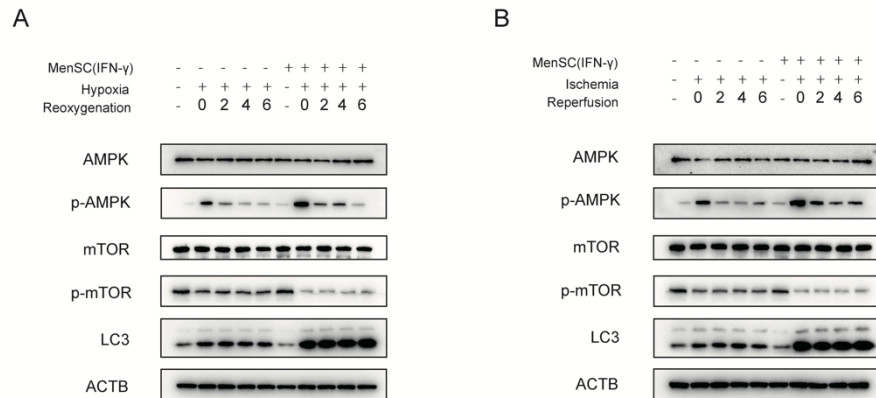


Supplementary Figure 1. PCA and PLS-DA of metabolomic data. A (cation); B (anion): PCA was used to evaluate the degree of aggregation of samples in the same group, and the distance between coordinate points represented the degree of aggregation and dispersion between samples. The shorter the distance is, the higher the similarity between samples, and the greater the distance is, the greater the difference between samples. The confidence ellipse indicates that this set of "real" samples is under 95% confidence. C (cation); D (anion): The PLS-DA analysis was used to evaluate the classification effect of different groups of samples. The greater the degree of separation between two groups of confidence ellipses in the figure is, the more significant the classification effect.



Supplementary Figure 2. The expression of autophagy-related proteins was measured at different time points to determine the appropriate timelines for establishing the H/R and I/R models. A (L02 cells); B (mouse livers): AMPK α , p-AMPK α , mTOR, p-mTOR, LC3, and ACTB expression after 0, 2, 4, and 6 hours of reoxygenation/reperfusion was determined by western blotting. The levels of autophagy-related proteins were measured in models treated with or without MSCs, and the time point with the most significant difference in expression was determined to be the appropriate timepoint for establishing the H/R and I/R models.

Supplementary Table 1 Suzuki's injury criteria

Score	Congestion	Vacuole degeneration	Necrosis
0	None	None	None
1	Slight	Slight	Single cell
2	Mild	Mild	< 30%
3	Moderate	Moderate	31%-60%
4	Severe	Severe	> 60%

Supplementary Table 2 Sequences of primers used in qRT-PCR

Gene	Sequences	Length (base)
ACTB	Forward: GCCAGCTTCGAGAAAGAGTTG	21
	Reverse: ATCCCAGAACTAGACGTGCAA	21
IDO	Forward: CATGTACGTTGCTATCCAGGC	21
	Reverse: CTCCTTAATGTCACGCACGAT	21

ACTB: Beta-Actin; IDO: Indoleamine 2,3-dioxygenase