

Supplementary Table 1. The ingredients of OB \geq 30% and DL \geq 0.1 in licorice and have nodes in Agilent Literature Search.

Supplementary Table 2. MCODE scoring for PPI network. Molecular docking was used as a tool to screen for ingredients have strongly energy binding to CYP3A4, which is a member of the cytochrome P450 family of oxidizing enzymes. MCODE was used to identify the hub genes or proteins in the networks with a connectivity degree ≥ 3.333 .

Supplementary Table 3. Active compounds whom could potentially deplete GSH and have highly total score binding to CYP3A4 according to the admetSAR website.

Supplementary Table 4. Molecular docking score for ingredients have strongly energy binding to CYP3A4.

Supplementary Table 5. Real-Time PCR primers sequences.

Supplementary Figure 6. There are 36 oxidoreductases that express by string and Nrf-2 as the core of the region to CYP450 connected to the network and in the center. Prove two important targets Nrf-2 and CYP450 in licorice and PQ.

Supplementary Figure 7. The effect of Licorice extract on levels of MDA and SOD. Effects of treatment with licorice extract on the levels of MDA (A) and SOD activity (B) of lung tissue. Treatment with licorice extract reduced the level of MDA and increased the activity in the lung tissues of PQ induced lung injury. But in LE (80mg/kg) MDA and SOD levels were increased compared with LE (60mg/kg). Data are means \pm SEM. n = 8. *P<0.05 compared with normal group; **P<0.05 compared with model group.

Supplementary Figure 8. DXMS docked to the catalytic site of CYP3A4.

Graphical-Abstract.