

## Supplementary Information

**Figure S1.** Effects of malic acid-induced caspase-3, -8 and -9 activities in HaCaT cells. Cells were treated with 15 mM of malic acid for 0, 24, and 48 h and collected for determination activities of caspase-3, caspase-8, and caspase-9 by flow cytometry. Data are presented as means  $\pm$  SD of the results from three independent experiments (\*  $p < 0.05$  vs. the indicated group).

