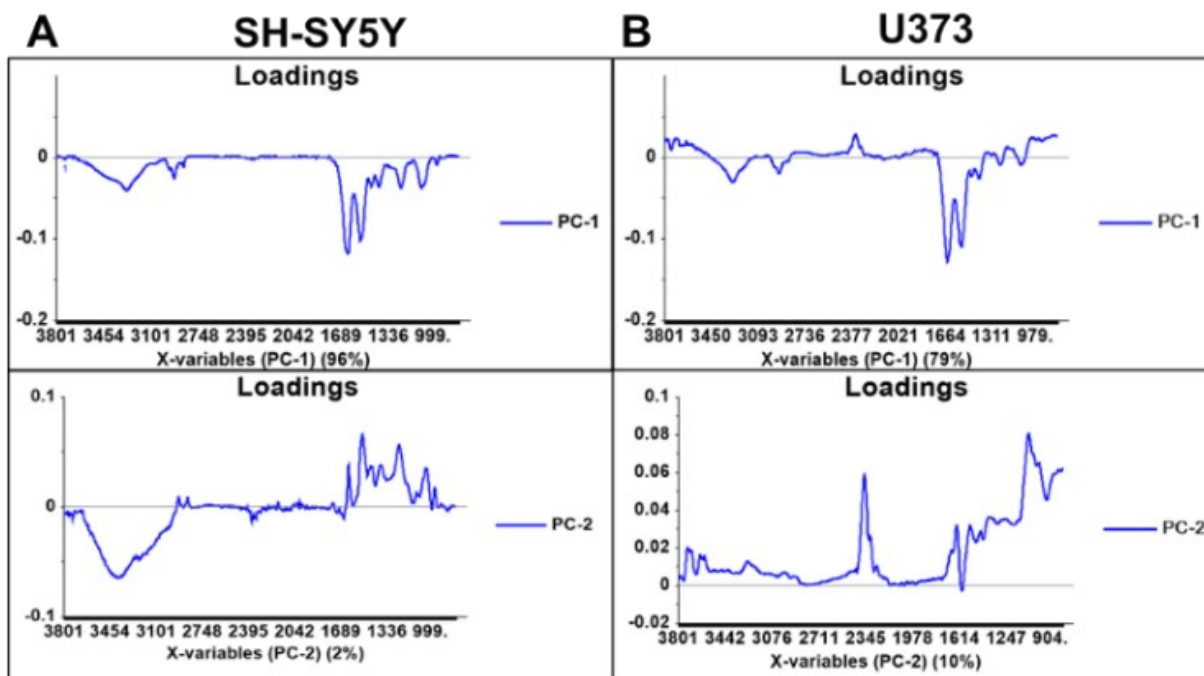
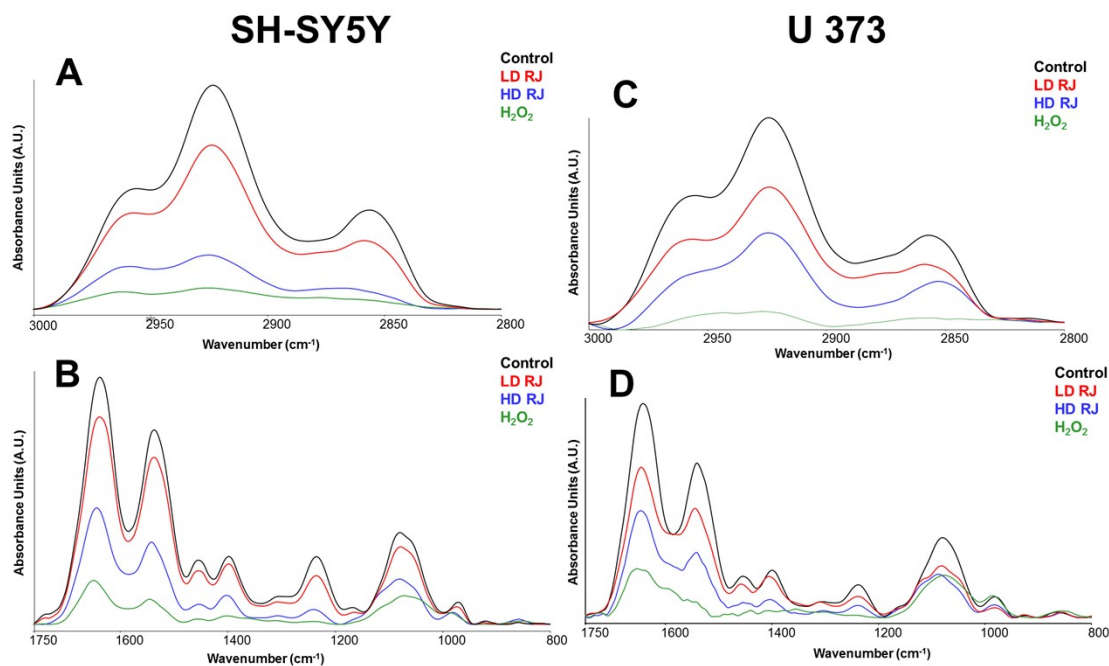


Supplementary Fig. 1 HCA dendrogram analysis of collected IR spectra from SH-SY5Y-human neuroblastoma (a) and U373-human glioblastoma (b) for control, 500 μ M H₂O₂, low dose (4 mg/ml) and high dose (10 mg/ml) of royal jelly (RJ)-treated groups



Supplementary Fig. 2 PCA loading plots for control, 500 μM H_2O_2 , low dose (4 mg/ml) and high dose (10 mg/ml) royal jelly (RJ)-treated groups of SH-SY5Y-human neuroblastoma (a) and U373-human glioblastoma (b).



Supplementary Fig. 3 The representative spectra of control, 500 μM H_2O_2 , low dose (4 mg/ml) and high dose (10 mg/ml) of royal jelly (RJ)-treated groups for SH-SY5Y-human neuroblastoma (a,b) and U373-human glioblastoma (c,d) cells in the A) 3000-2800 cm^{-1} and B) 1750-800 cm^{-1} spectral regions.

Supplementary Table 1. Quantitative spectral analysis and their indications.

Band area/ area ratio	Indications
A_{2926}	Saturated lipid concentration
A_{2926} / A_{2964}	Acyl chain length of fatty acids
A_{1741}	Triglycerides-cholesterol ester concentration
A_{1638}	Protein concentration
$(A_{2950} + A_{2920}) / (A_{1654} + A_{1623} + A_{1534})$	Total lipid/Total protein
A_{1638} / A_{1539}	Protein structural and conformational changes
A_{1238} / A_{2964}	Protein phosphorylation
A_{1741} / A_{1638}	Protein carbonylation
A_{1168}	DNA concentration
A_{970}	RNA concentration