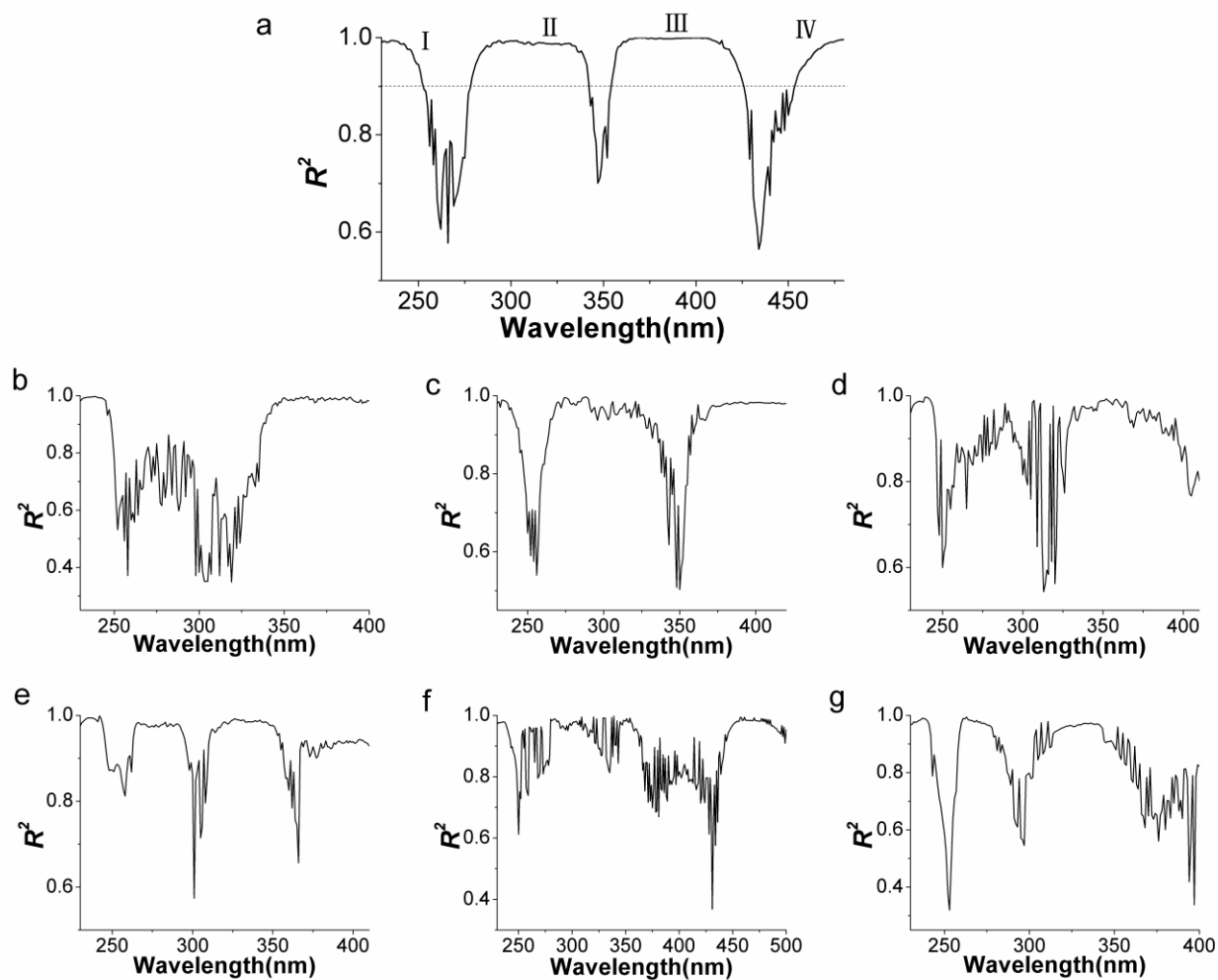


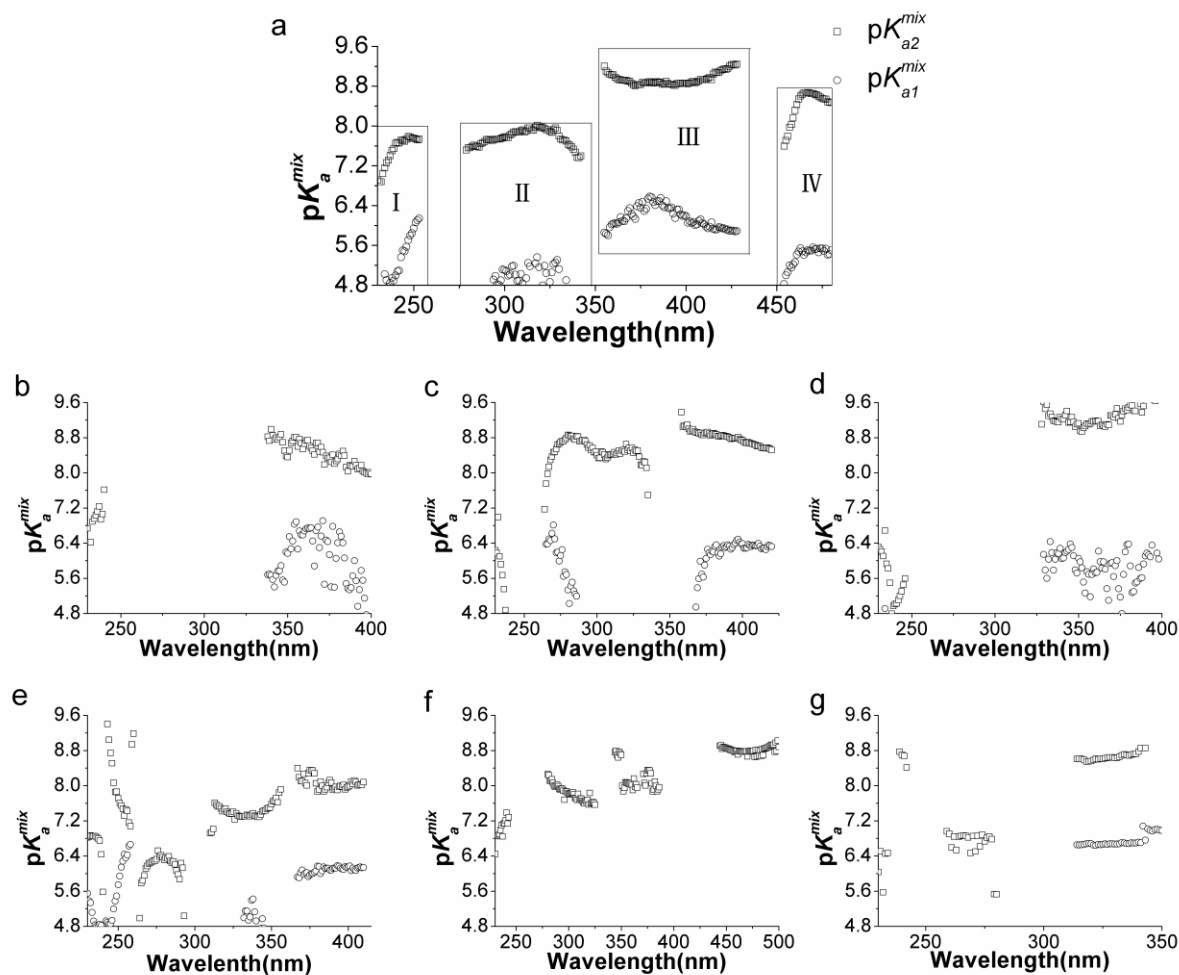
Supplemental Figure 1 The linearity between absorbances and concentrations at different wavelengths in different plant extracts.

a to i corresponded to the extract of Cape Jasmine Fruit, Chinese Angelica Root, Orange Peel, Eucommia Bark, Ginseng Root, Licorice, Pilose Asiabell Root, Safflower and White Paeony Root respectively. The linearity rose first then remained and descended later with the wavelength shifted toward longer wavelength, which was divided into three stages tentatively named as ascent stage, steady stage and descending stage. At steady stage, the absorbances and the concentrations were highly linear correlated within the analyzed concentration range. The linear correlation was out of steady at ascent and descending stage due to the deviations from the Lambert-Beer law. To achieve high sensitivity quantification and good reproducibility data, some factors were considered in the spectrophotometric analysis of plant extract. (1) UV-Vis absorption spectra of plant extracts at the chosen concentration should be smooth. (2) The absorbance at the major absorption bands was in a proper range (0.15~0.8). (3) Analytical wavelengths should be limited in steady stage.



Supplemental Figure 2 Simulation of two-step ionization process in plant extracts.

a to g corresponded to the acid dissociation constant profiles of extracts of Cape Jasmine Fruit, Chinese Angelica Root, Orange Peel, Ginseng Root, Licorice, Safflower and White Paeony Root respectively. Extract of Cape Jasmine Fruit was taken for an illustration.



Supplemental Figure 3 Acid dissociation constants of plant extracts in two-step ionization process.

a to g corresponded to the acid dissociation constant profiles of extracts of Cape Jasmine Fruit, Chinese Angelica Root, Orange Peel, Ginseng Root, Licorice, Safflower and White Paeony Root respectively. Extract of Cape Jasmine Fruit was taken for an illustration. Each region encircled with a box has two pK_a^{mix} values.