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Simultaneous analysis of diuretic drugs in food and dietary supplements using LC/PDA and LC/MS/MS

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Diuretic drugs such as chlorothiazide, hydrochlorothiazide, hydroflumethiazide, trichloromethiazide and methylclothiazide are illegal to be included in food and dietary supplements since abuse intake of the drugs via food without medical prescription can be caused life-threatening side effects. Governmental agencies of food and drug safety invest their efforts to screen out food and dietary supplements illegally containing diuretic drugs. We developed an accurate, simple, rapid and simultaneous analysis method of five thiazide diuretic drugs in food and dietary supplements using liquid chromatography coupled with photodiode array detection (LC/PDA). The developed method was fully validated and showed good results with respect to specificity, linearity ($r^2 > 0.99$), limit of detection ($0.1 \mu\text{g/mL}$), limit of quantification ($0.4 \mu\text{g/mL}$), precision ($\text{RSD} < 3.3\%$), recovery ($92.1 \sim 106.4\%$), and reproducibility. It also satisfied all standards suggested by AOAC for the analysis of diuretic drugs in food and food supplements. To confirm the detected anti-obesity drugs in food and dietary supplements, we also developed a qualitative analysis method by Liquid chromatography coupled with mass spectrometry (LC/MS). Ninety foods and dietary supplements purchased by internet and local market in Korea were tested with the developed method. Diuretic drugs were not detected in all samples. LC/PDA and LC/MS methods described in this study were simple, rapid and reliable; the methods may be suitable for a rapid and sensitive analysis of chlorothiazide, hydrochlorothiazide, hydroflumethiazide, trichloromethiazide and methylclothiazide simultaneously in food and dietary supplements.

Biography

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