Adulteration with synthetic substances of herbal medicines used for weight loss

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Introduction: Nowadays, obesity is a public health problem worldwide. One consequence of this fact is the increased consume of medications used to lose weight, including phytomedicines. This exacerbated consumption associated with the adulteration with synthetic drugs that is occurring with some herbal medicines awakened interest in this study. Experimental part: The methanol extracts of ten phytomedicines were analyzed by comparative thin layer chromatography using as standards diuretics (furosemide and hydrochlorothiazide), amphetamines (amfepramone, fenproporex and sibutramine) and benzodiazepines (diazepam, lorazepam, clonazepam and bromazepam). Silica gel 60F\textsubscript{254} was used as stationary phase. For the plates with the basic character standards (diuretics and amphetamines), the eluent used was ethyl acetate:methanol:sodium hydroxide 85:10:5 (v/v/v) and detection with UV light 254nm/ninhydrin solution. The plates that were performed with acid-neutral character standards (benzodiazepines), the eluent was chloroform:acetone 9:1 (v/v) and detection with UV 254nm/Dragendorff reagent.

Results/discussion: Five samples possibly were adulterated with synthetic substances since only a prominent spot on their chromatograms was observed. The herbal medicines referred as A, B, E and F showed spots with retention factor (Rf) and color similar to that of lorazepam. However, after co-elution of the samples with lorazepam the adulteration was confirmed only for sample E. Also, the phytomedicine named as I showed a possible adulteration with furosemide, due to the Rf spot very similar with the standard spot. But after exposure of the chromatogram to ninhydrin solution it was discarded due to the lack of the violet color in the sample spot as was observed in the standard. Spectroscopic analysis is underway to identify and to confirm the adulterant’s structure.

Conclusion: At the end of the analysis, we found that half of the samples analyzed probably are adulterated with synthetic substance. Lorazepam was identified in one sample. The use of synthetic substances undeclared in phytomedicines causes risks to the health of patients.