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The use of the ITS region in marketable mushrooms authenticity

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Edible mushrooms, due to their flavour and nutritional characteristics, are very popular in many dishes. Some species are high valued and reaching high market values. There are frequent reports of adulteration of these kinds of products due to the presence of fungal species less expensive among others with high-value market. This adulteration occurs especially in products in which the flavour is not prominent and in which the mushrooms are difficult to examine. In this work we utilized the internal transcribed spacer (ITS) for the identification of marketable mushrooms species in order to detect fraudulent addition of cheaper species. The products analysed were labelled as *Agaricus bisporus* (known as white mushroom), Portobello, Shiitake, Maitake, Enoki, Eringi, *Auricularia auricula-judae*, *Cantharellus cibarius*, *Craterellus cornucopioides*, shimeji and *Boletus edulis*. Following DNA isolation, the corresponding ITS regions were amplified and sequenced, using the universal primers ITS1FO and ITS4RE. The obtained DNA sequences were analysed and fungal identification was performed by comparison with deposited sequences on NCBI database. The results obtained shown that the ITS region is a suitable method of identifying mushroom species. Furthermore it was verified that the great number of the mushrooms analysed were correctly identified. However, one of the products, the shimeji, is uncorrected labelled. The advantages and disadvantages of the use of the ITS region to detect frauds in marketed mushrooms will be present and discussed.