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AROMA COMPOUNDS IN ELEVEN EDIBLE MUSHROOM SPECIES:
RELATIONSHIP BETWEEN VOLATILE PROFILE AND SENSORIAL
CHARACTERISTICS

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Wild edible mushrooms are consumed a lot in many countries, being cooked or eaten in salads.
Their culinary and commercial value is mainly due to their organoleptic properties, namely
aroma and flavour. In addition, the aroma is very characteristic for each mushroom species,
which determines the distinction between them (1, 2). Despite the high consumption of
mushrooms, little work is available concerning their volatile composition. Trás-os-Montes region
(north-eastern Portugal) is known for the variety of its soils and diversity of climate conditions.
This variability assumes an important role in mushroom production, which is why this region is
recognised as one of the richest regions in wild edible species. In this work eleven wild edible
mushrooms collected in this region were studied: Suillus bellini, Suillus luteus, Suillus
granulatus, Tricholomopsis rutilans, Hygrophorus agathosmus, Amanita rubescens, Russula
cyanoxantha, Boletus edulis, Tricholoma equestre, Fistulina hepatica and Cantharellus cibarius.
With the exception of B. edulis, F. hepatica, C. cibarius and S. luteus, there is no knowledge of
volatile characterisation of these species.
The volatile and semi-volatile constituents were determined by headspace solid-phase
microextraction (HS-SPME) and by liquid extraction combined with gas chromatography-mass
spectrometry (GC-MSMS) (3). A total of 49 volatiles and 17 semi-volatile components were
identified. Simultaneously, using the descriptive analysis (4) of these mushroom species were
performed by a panel and six descriptors were selected: “mushroom-like”, “straw”, “floral”,
honey-like”, “hay-herb” and “nuty”. The multivariate analysis (principal component analysis
and agglomerative hierarchical cluster analysis) of sensorial and chemical data revealed a
relation between sensory descriptors and volatiles. The studied mushroom species can be
divided in three groups: one rich in C8 derivatives, like 3-octanol, 1-octen-3-ol, trans-2-octen-1-
ol, 3-octanone and 1-octen-3-one; another with high amounts of norisoprenoids, such as 6-methyl-
5-hepten-2-one, 3,7,11-trimethyl-1,6,10-dodecatrien-3-ol, 6,10-dimethyl-5,9-undecadien-2-one,
(5E,9E)-6,10,14-trimethyl-5,9,13-pentadecatrien-2-one, terpenic volatile compounds (linalool,
terpineol, limonene, α-pinene, menthol, β-Pinen e, camphene, 1,4-cineole, eucalyptol, o-cymene)
and phenylacetaldehyde; and a third one rich in methional. The presence and contents of these
compounds gives a considerable contribution to their sensory characteristics.
References:


