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# Content of manganese in the wild edible mushroom species of *Agaricus bitorquis* in the English city of Leicester.

**Jagdev GS.[1], Sgamma T.[1], Lobo-Bedmar MC.[2], Evans MD.[1], Peña MA.[3], Peña-Fernández A. *[1,4]**

[1] Leicester School of Allied Health Sciences, De Montfort University. The Gateway, Leicester LE19BH, UK.

[2] IMIDRA. Departamento de Investigación Agroambiental. "Finca el Encín" Crta. Madrid-Barcelona Km, 38.2, 28800 Alcalá de Henares, Madrid, Spain.

[3] Facultad de Farmacia, Universidad de Alcalá, Crta. Madrid-Barcelona Km, 33.6, 28871 Alcalá de Henares, Madrid, Spain.

[4] Faculty of Medicine and Health Sciences, University of Alcalá, Ctra. Madrid-Barcelona, Km. 33.600, 28871 Alcalá de Henares, Madrid, Spain.

*Email: antonio.penafer@uah.es

## INTRODUCTION

The aim was to assess the risks to manganese (Mn) present in wild edible mushrooms *Agaricus bitorquis* collected in Leicester city, England.

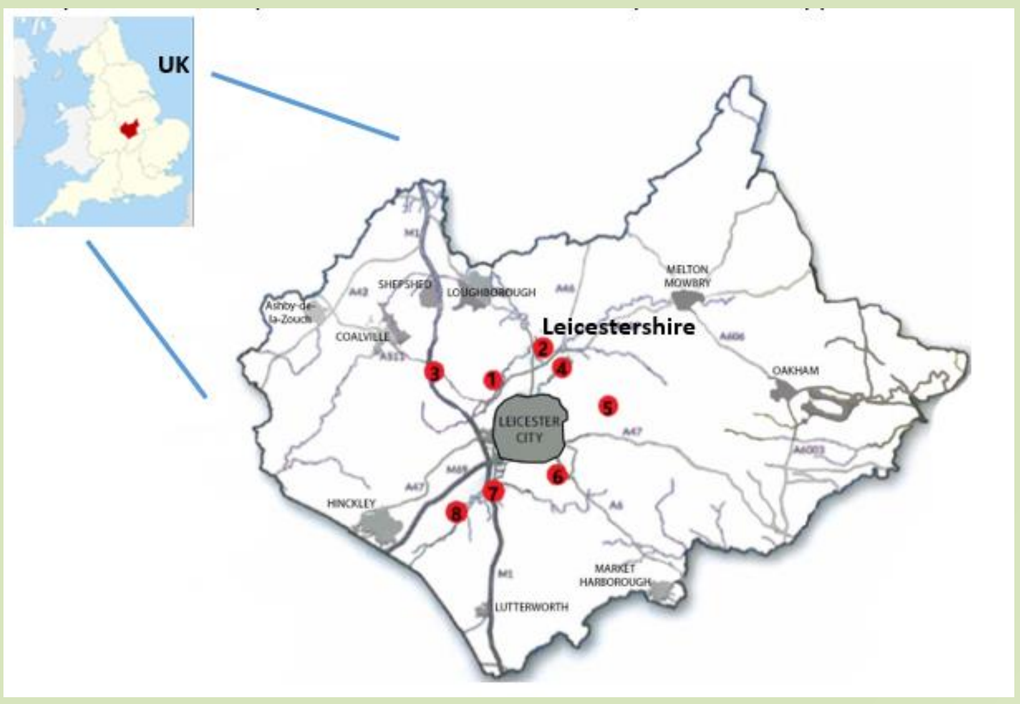


Fig 1. Study area. The city of Leicester is indicated in grey (Leicestershire, UK).

## MATERIAL AND METHODS

**Twenty-two mushrooms were collected from an open green area close to St Augustine Road, a high traffic area within Leicester (Fig 1).**

- ❑ Species identification was confirmed by DNA barcoding after extracting DNA from frozen homogenised ground mushroom material using DNeasy Plant Mini Kit® (Sgamma et al., 2018).
- ❑ Mn was monitored by ICP-MS in cleaned/dried/homogenised mushrooms [LoD=0.529 mg/kg dry weight (dw)], and in 36 topsoil composite samples collected across the city.
- ❑ Data was processed with appropriate statistical methods available in R software.

## RESULTS AND DISCUSSION

- ✓**Mn was detected in all the samples; median and range in mg/kg dw were: 10.541 (6.877-14.158).**
- ✓**The distribution of Mn in mushroom tissues did not show statistical differences ($p$=0.1), although slightly higher levels were found in caps *versus* stipes (data provided as median and ranges in mg/kg dw): 10.541 (6.877-14.158) vs. 9.617 (3.665-17.154).**
- ✓**These results agree with the literature reporting higher accumulation of metals in the caps of wild edible mushrooms. Thus, a translocation factor of 1.096 was determined for Mn in the monitored mushrooms.**
- ✓**Although the content of Mn in mushrooms would be minimally affected by its presence in topsoils (bioconcentration factor was lower than the unit), the levels monitored in composite topsoil samples [411.012 (253.066-730.977 mg/kg)] were studied.**
- ✓**Non-carcinogenic risks quantified for the levels of Mn in topsoils were lower than the threshold suggesting minimal risks to the population.**

## CONCLUSIONS

**The levels of Mn were much higher than those detected in *Agaricus bisporus* species collected in a natural forest in eastern Poland (5.91 mg/kg dw;** Mirończuk-Chodakowska et al., 2019**), suggesting a potential contamination by Mn in the inner city of Leicester, which would be in agreement with other toxic metals monitored in these samples, such as cadmium and lead.**

## REFERENCES

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