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**OBJETIVE** – To determine the elements As, Co, Cr, Cs, Fe, La, Rb, Sc, Th, U, and Zn in 24 samples of wild mushrooms collected in the Poços de Caldas Plateau region and to verify the use of mushrooms as indicators of environmental radioactive contamination.

## INTRODUCTION

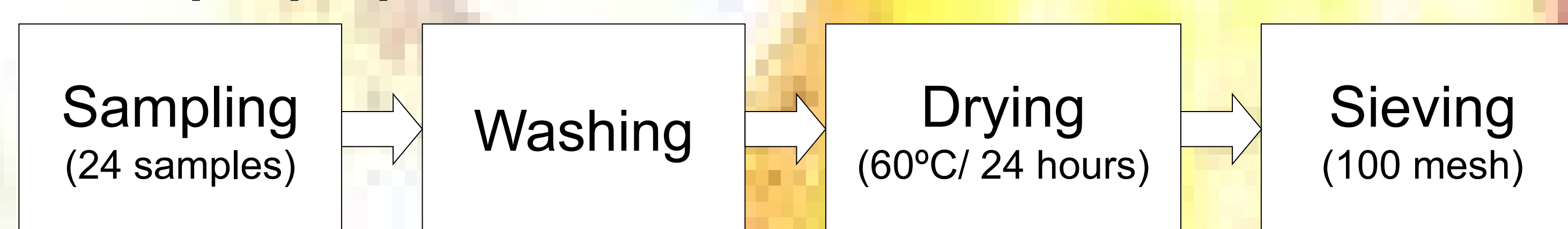
Mushrooms are fungi species which have high capacity to retain elements and radionuclides such as U and Th from the environment. Studies have demonstrated that wild mushrooms can be used as environmental indicators and monitors to evaluate contamination and quality of ecosystems. Uranium and thorium are naturally occurring radioactive elements, widely distributed in the earth's crust. In the so called radioactive anomaly regions the activities of these elements are higher compared to the average in the crust. Seventy areas of radioactive anomalies have been identified in the Poços de Caldas Plateau region in Brazil.

Table 1: Results of the Reference Materials analyzed by INAA

Element	INCT- MPH2			IAEA Mushroom		
	<sup>a</sup> Mean ± SD	Certified Value	ER (%)	<sup>a</sup> Mean ± SD	Certified Value	ER (%)
As (mg.kg <sup>-1</sup> )	0.164 ± 0.035	0.191 ± 0.023	14.1	0.405 ± 0.032	0.417 ± 0.057	2.9
Co (mg.kg <sup>-1</sup> )	0.206 ± 0.018	0.210 ± 0.025	1.9	0.047 ± 0.003	0.045 ± 0.003	4.4
Cr (mg.kg <sup>-1</sup> )	1.57 ± 0.13	1.69 ± 0.13	7.1	1.32 ± 0.12	1.25 ± 0.44	5.6
Cs (mg.kg <sup>-1</sup> )	0.074 ± 0.009	0.076 ± 0.007	2.6	-	-	-
Fe (mg.kg <sup>-1</sup> )	473 ± 41	(460) <sup>b</sup>	-	-	-	-
La (mg.kg <sup>-1</sup> )	0.51 ± 0.05	0.571 ± 0.046	10.7	-	-	-
Rb (mg.kg <sup>-1</sup> )	10 ± 1	10.7 ± 0.7	6.5	415 ± 64	381 ± 27	8.9
Sc (mg.kg <sup>-1</sup> )	0.114 ± 0.002	0.123 ± 0.009	7.3	-	-	-
Th (mg.kg <sup>-1</sup> )	0.155 ± 0.023	0.154 ± 0.013	0.6	-	-	-
U (mg.kg <sup>-1</sup> )	0.052 ± 0.005	(49) <sup>b</sup>	-	0.31 ± 0.05	0.34 ± 0.05	8.8
Zn (mg.kg <sup>-1</sup> )	28 ± 3	33.5 ± 2.1	16.4	-	-	-

## METHOD AND MATERIALS

Sample preparation:



The element concentrations determined in the wild mushroom samples by INAA are presented in the Figures below.

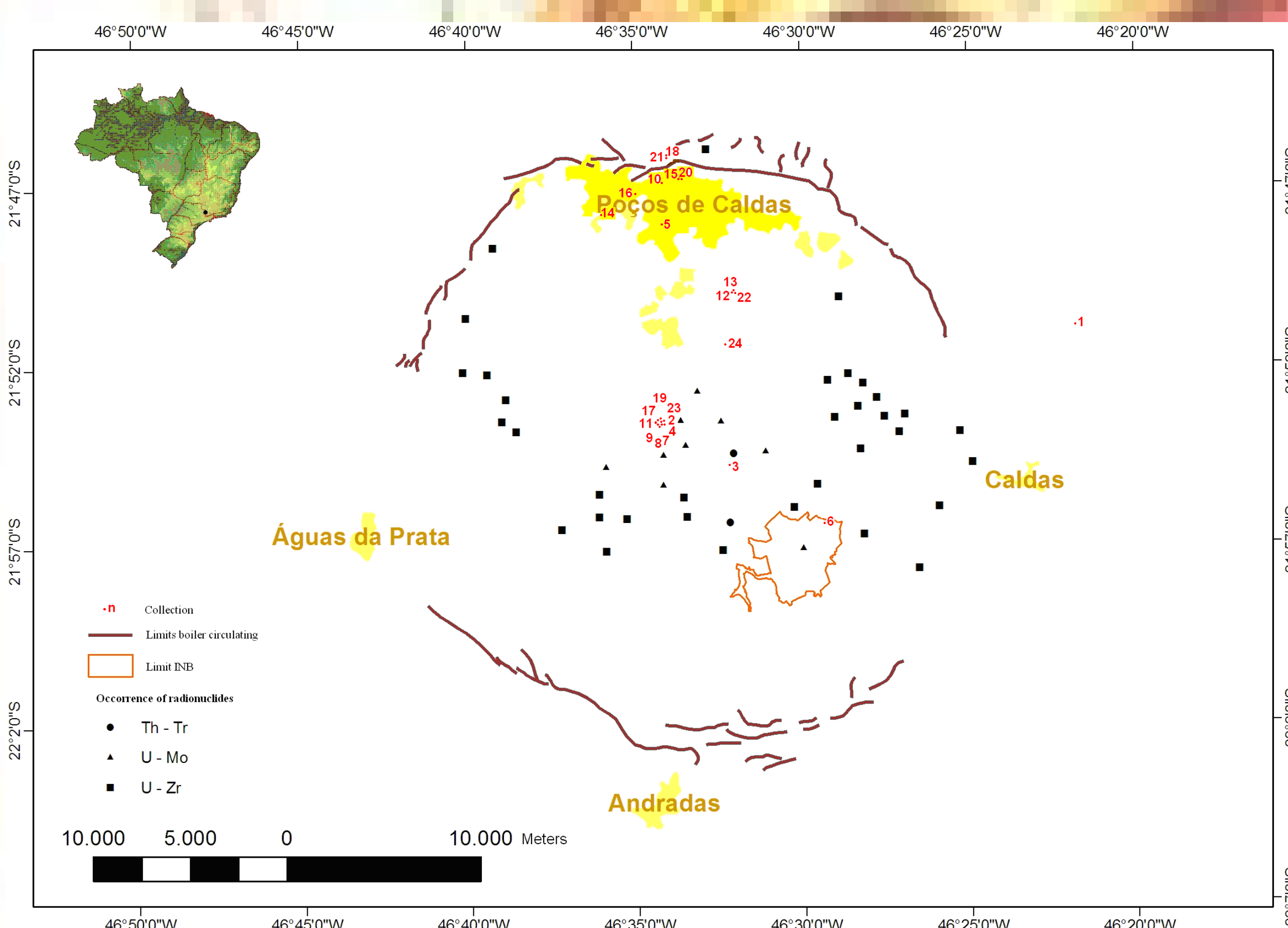
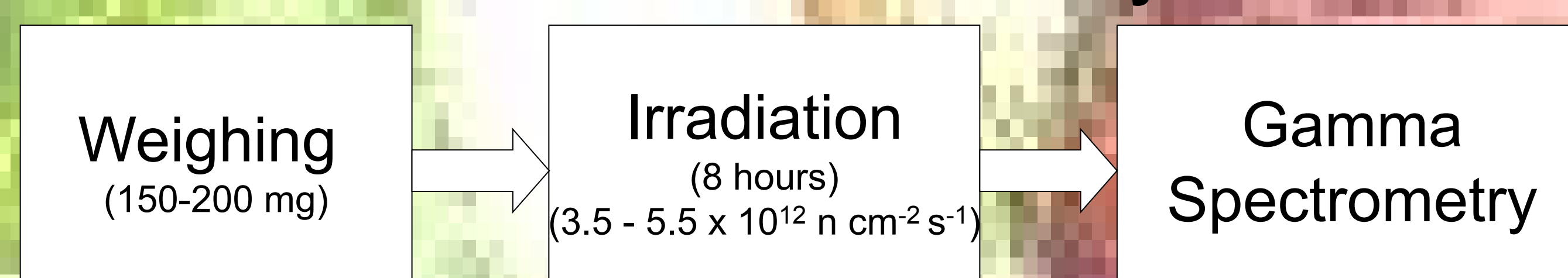


Figure: Location of sampling areas



Figures: Element Concentrations in the 24 wild mushrooms

Instrumental Neutron Activation Analysis:



## RESULTS AND DISCUSSION

- The mushroom samples presented a large variation for the most elements, mainly to U, Th, Fe, Se and Sc;
- The highest levels were obtained in wild samples collected in the rural area (samples 6,9, 10,11, 12 and 17)

## CONCLUSION

Mushrooms can be used as indicator to verify the environmental contamination, being appropriate to evaluate the radioactive levels in areas such as Natural Occurrence in Radioactive Materials (NORM).

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