

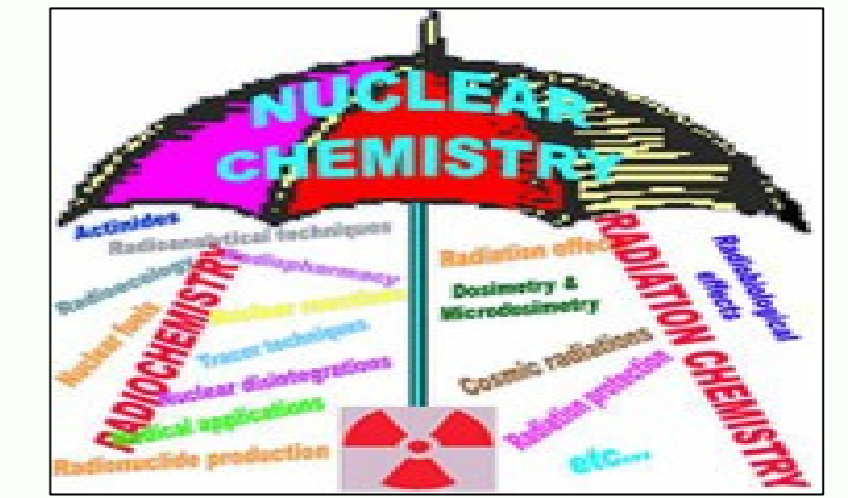
CORRELATION STUDY OF AIR POLLUTION AND CARDIO-RESPIRATORY DISEASES THROUGH NAA OF ATMOSPHERIC POLLUTANT BIOMONITOR

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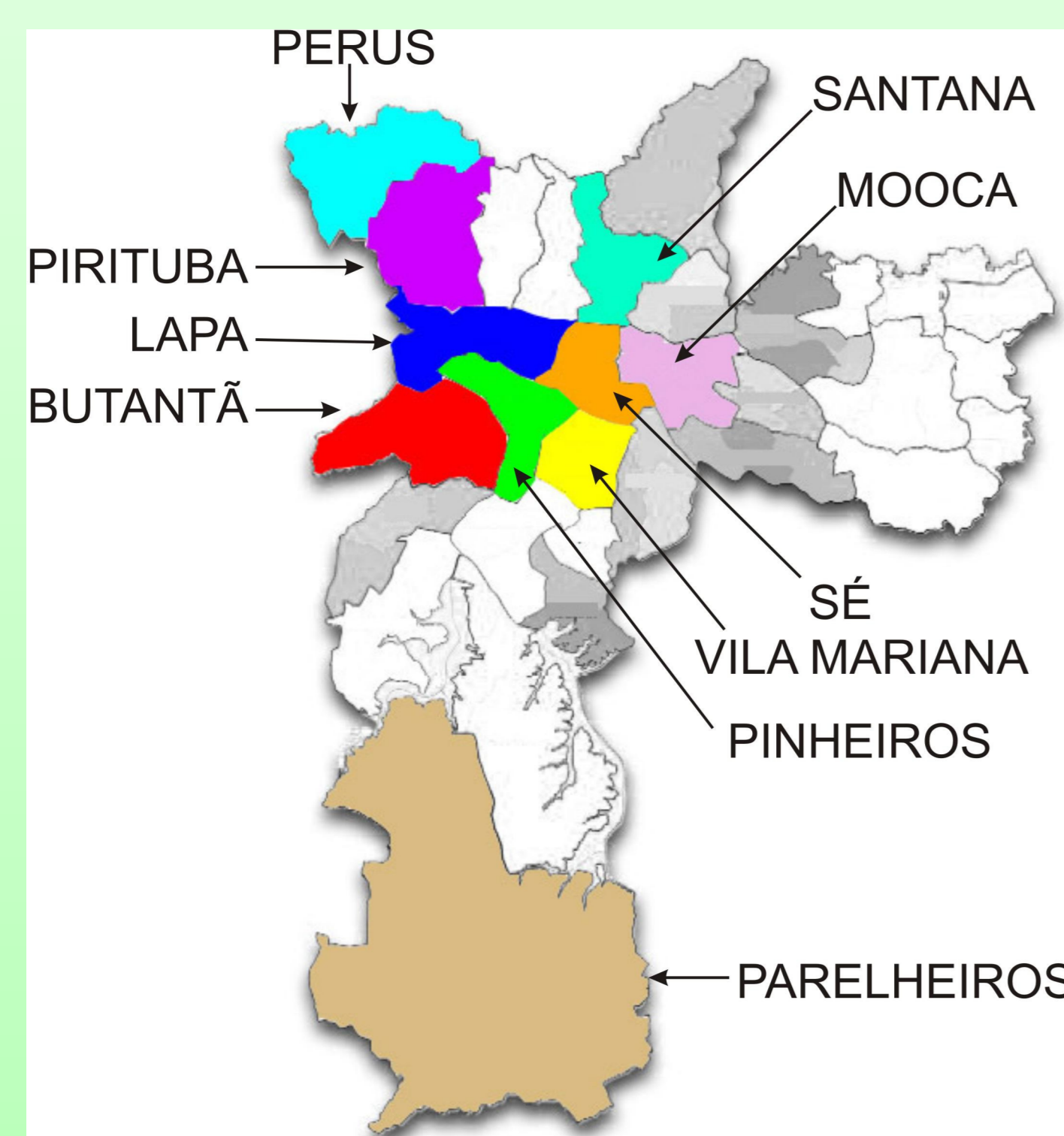
INTRODUCTION

Urban and industrial developments in São Paulo city have been responsible for the increase of atmospheric pollutant emissions that may cause adverse effects on human health and in the environment.

In the present study we further explored the feasibility of using trace element accumulation in lichens (*Canoparmelia texana*) as an alternative to investigate the association between air pollution and cardio-respiratory mortality rate in a population of São Paulo city.

EXPERIMENTAL

Study Area:



Study area in São Paulo city (10 sub prefectures) and reference site (P.E. Intervales) of Atlantic Forest

Population Study and Health Data

Population over 45 years

Diseases : ICD10 : (ICD I00 to I99 and J0 to J99)

Mortality data for the period 2005 - 2009

Mortality database from the website:

<http://ww2.prefeitura.sp.gov.br/cgi/deftohtm.exe?secretarias/saude/TABNET/SIM/obito.def> , and

Population data for each sub prefecture:

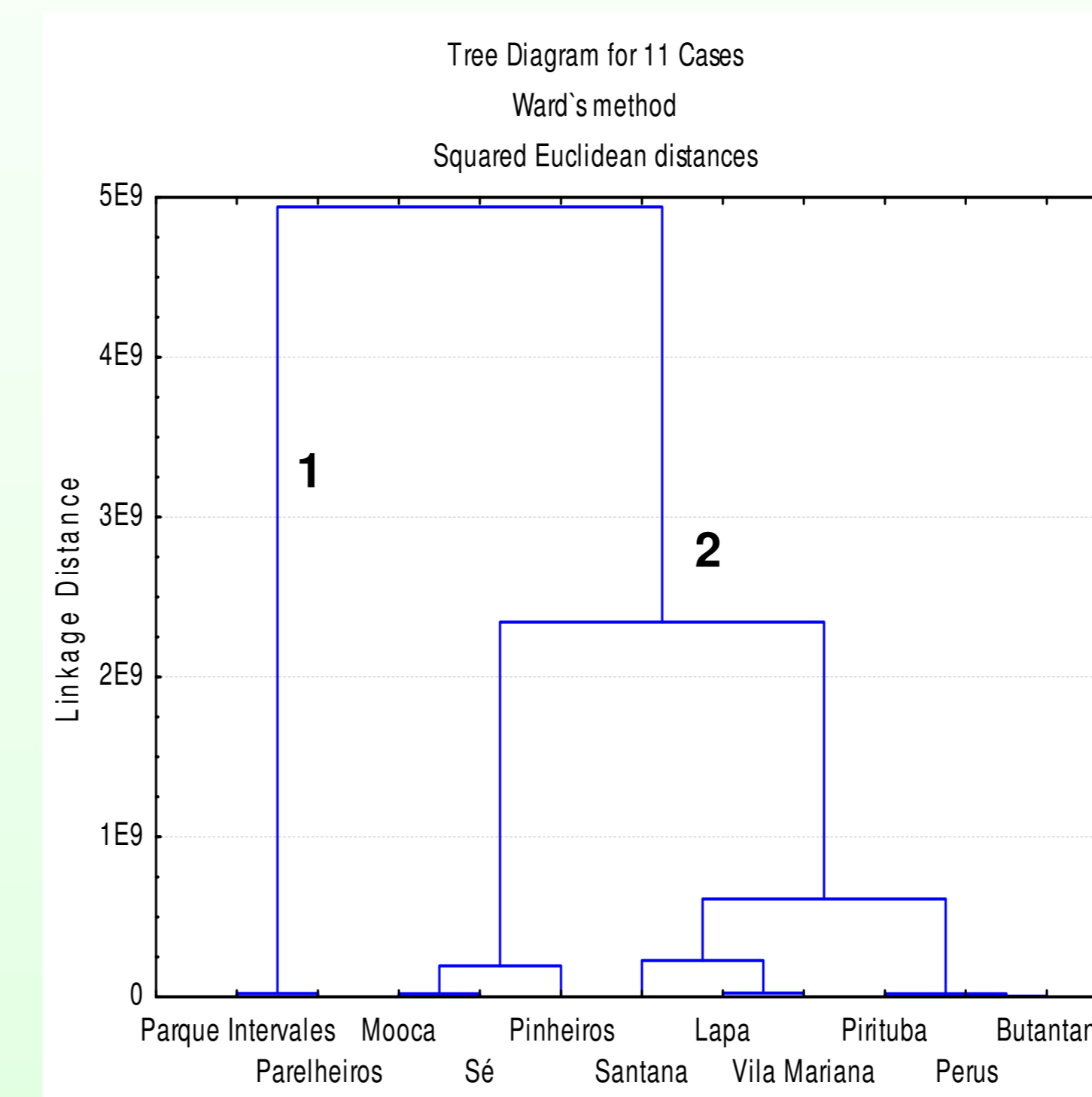
<http://ww2.prefeitura.sp.gov.br/cgi/deftohtm.exe?secretarias/saude/TABNET/POP/pop.def>

Analytical Method: INAA

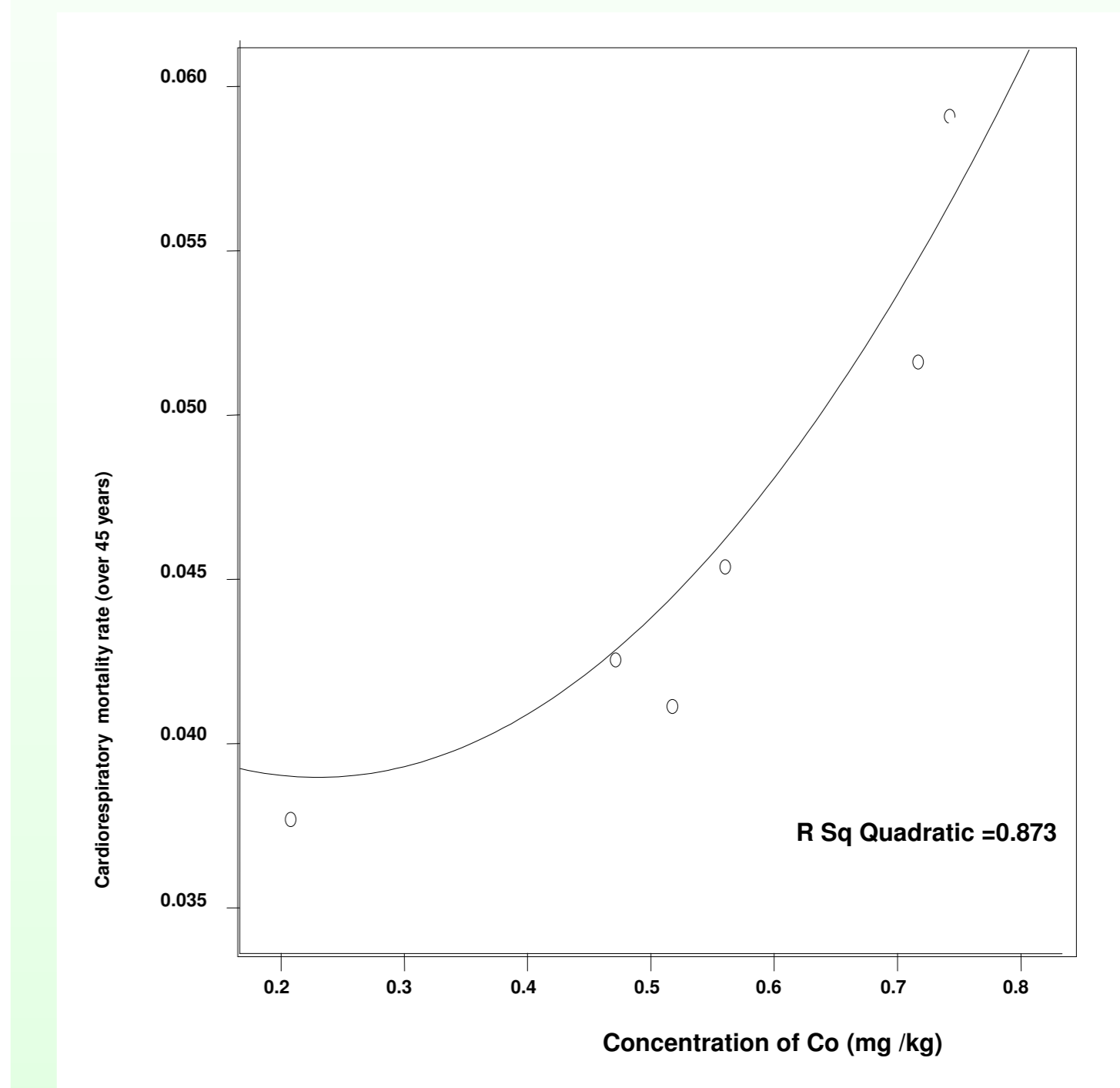
Elements determined: As, Br, Ba, Ca, Ce, Cl, Co, Cr, Cs, Fe, Hf, K, Mn, Mg, Na, Rb, Sb, Sc, Se, Th, V and Zn

Quality control: Analyses of the CRM IAEA 336 Lichen

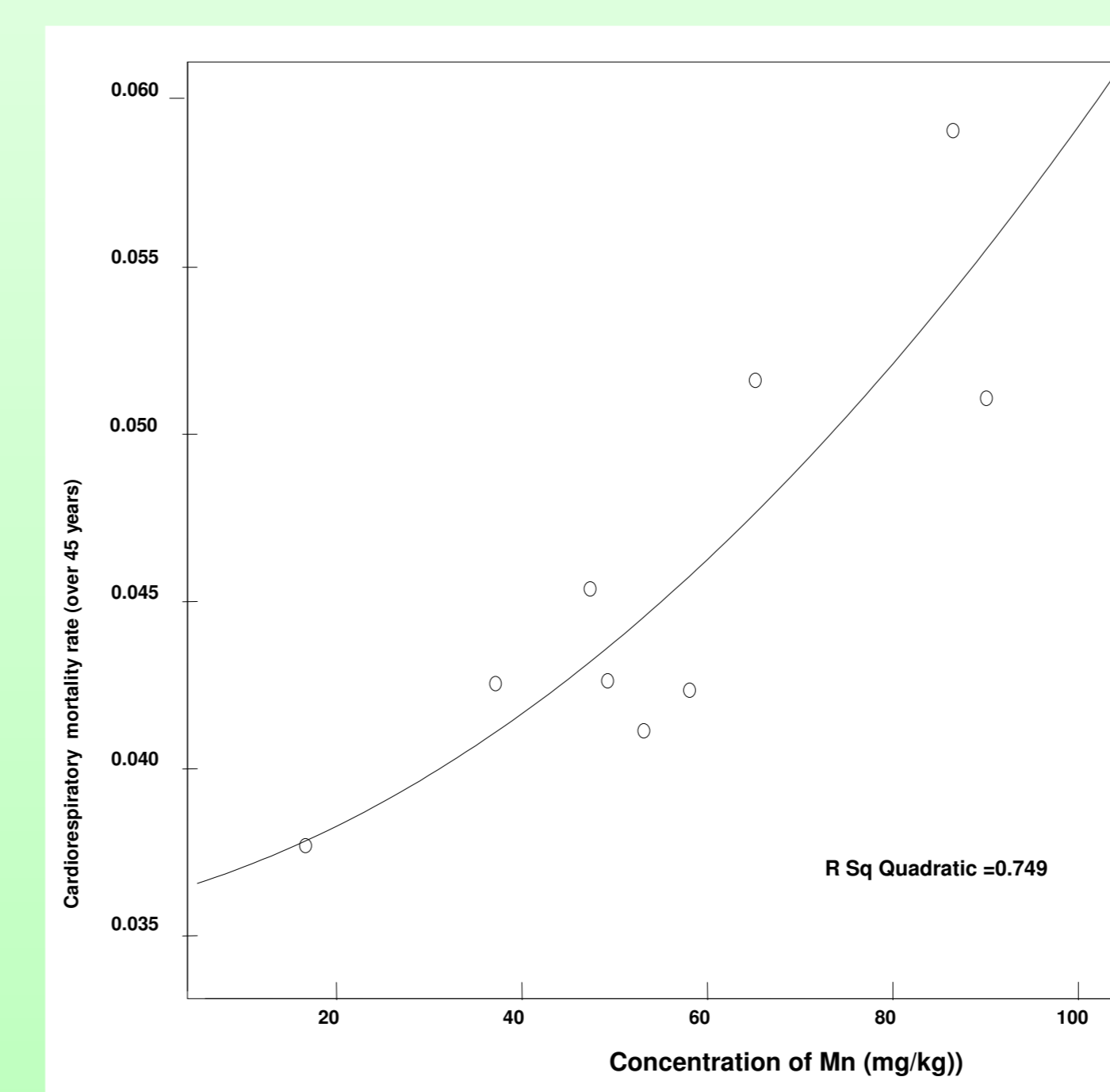
RESULTS



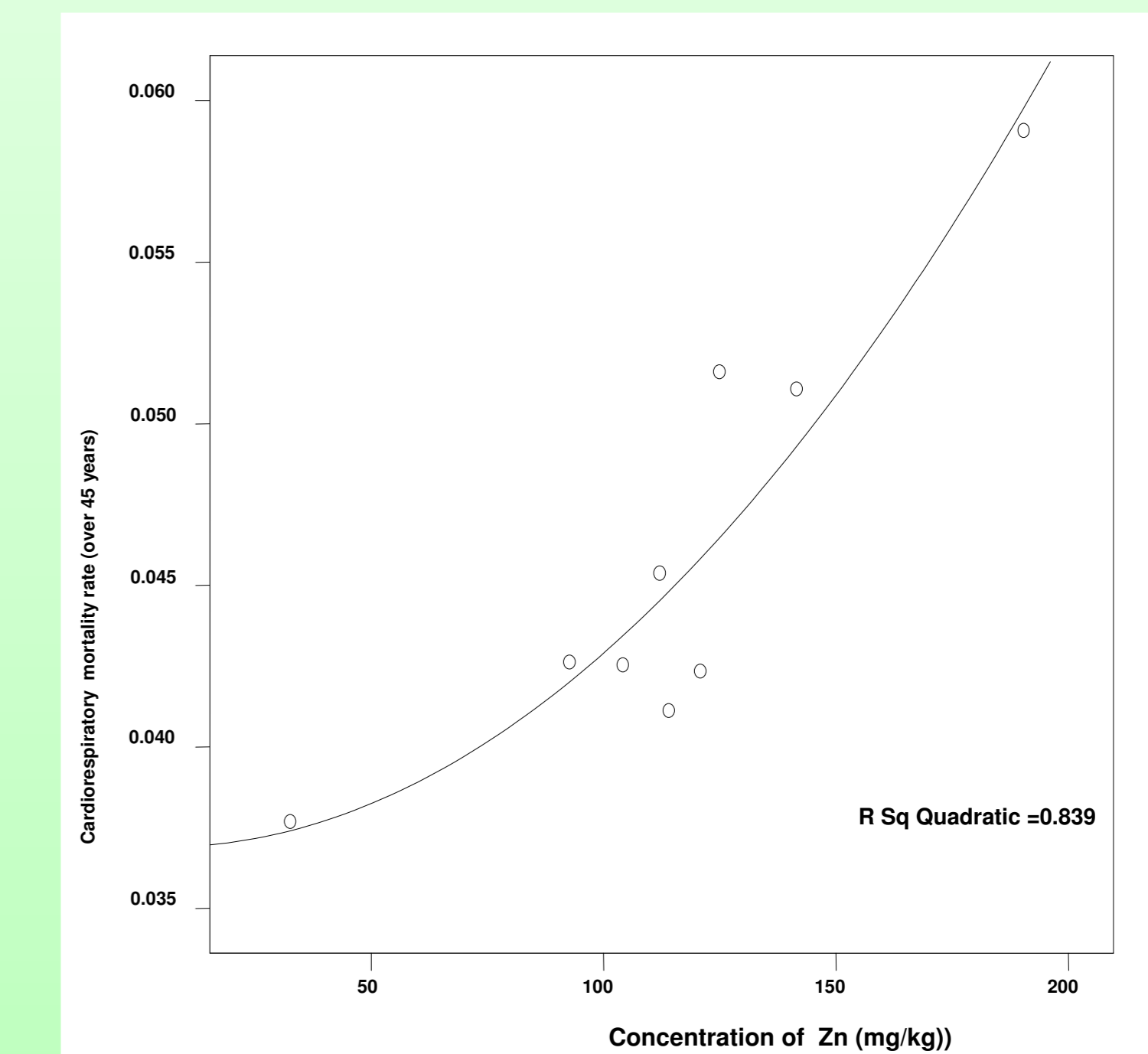
Dendrogram of discriminant analysis using all element results



Correlation between Co concentrations in lichens and cardio-respiratory mortality rates for adults over 45 years



Correlation between Mn and Zn concentrations in lichens and cardio-respiratory mortality rates for adults over 45 years



CONCLUSIONS

1. Dendrogram obtained by cluster analysis confirmed coherent groups of sites. Group 1 is formed by sampling sites P.E. Intervales and Parelheiros that are considered clean regions. Group 2 is formed by ten sub prefectures located near industrial and urban areas with heavy traffic.
2. Statistical treatment of Pearson's correlation indicated significant correlation between the lichen element concentrations and mortality rates for Co ($r^2 = 0.873$), Mn ($r^2 = 0.749$) and Zn ($r^2 = 0.839$). These significant correlations found can provide indications of possible causes of mortality of inhabitants over 45 years.

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