

PRELIMINARY RESULTS.

Raúl Harari, Ulf Strömberg, Karin Broberg, Lars Gerhardsson, Karin Engström, Chunying Chen, Florencia Harari, Staffan Skerfving

WP III:1 CHILDREN EXPOSURE TO HEAVY METALS IN ECUADOR.

Three different groups of children from mining area (Bella Rica), urban area (Ponce Enriquez) and rural area (Tenguel) were studied about presence of mercury, lead and cadmium. Figures I, II and III shows the results

Comparing between areas we have more exposure in the mining area than urban and rural area. Fish consumption and amalgams fillings were considered and it seems that food is doing an important contribution.

Comparing with other countries, children in Ecuador are more exposed to mercury, lead and cadmium. Furthermore, two children showed toxic levels of mercury.

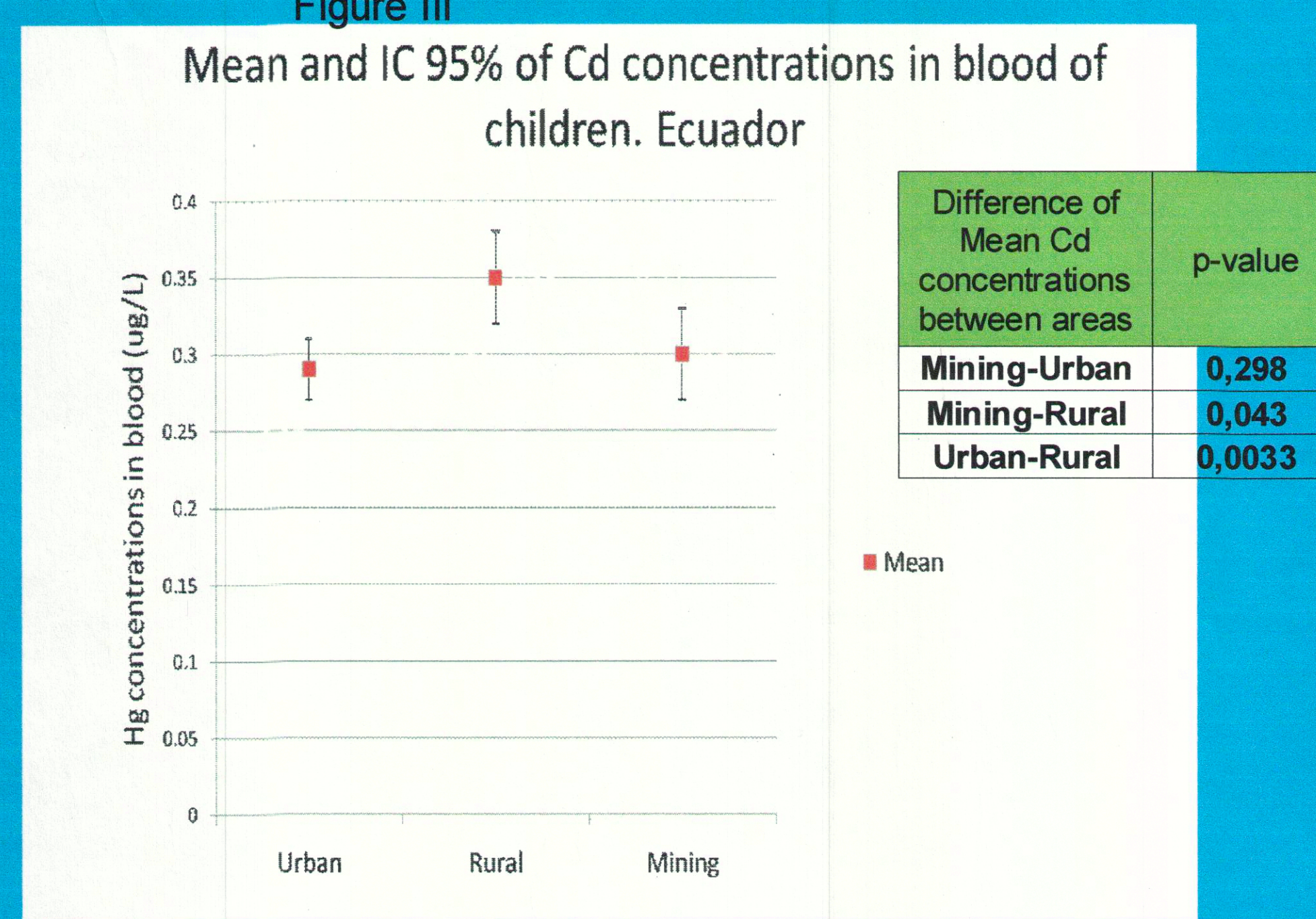
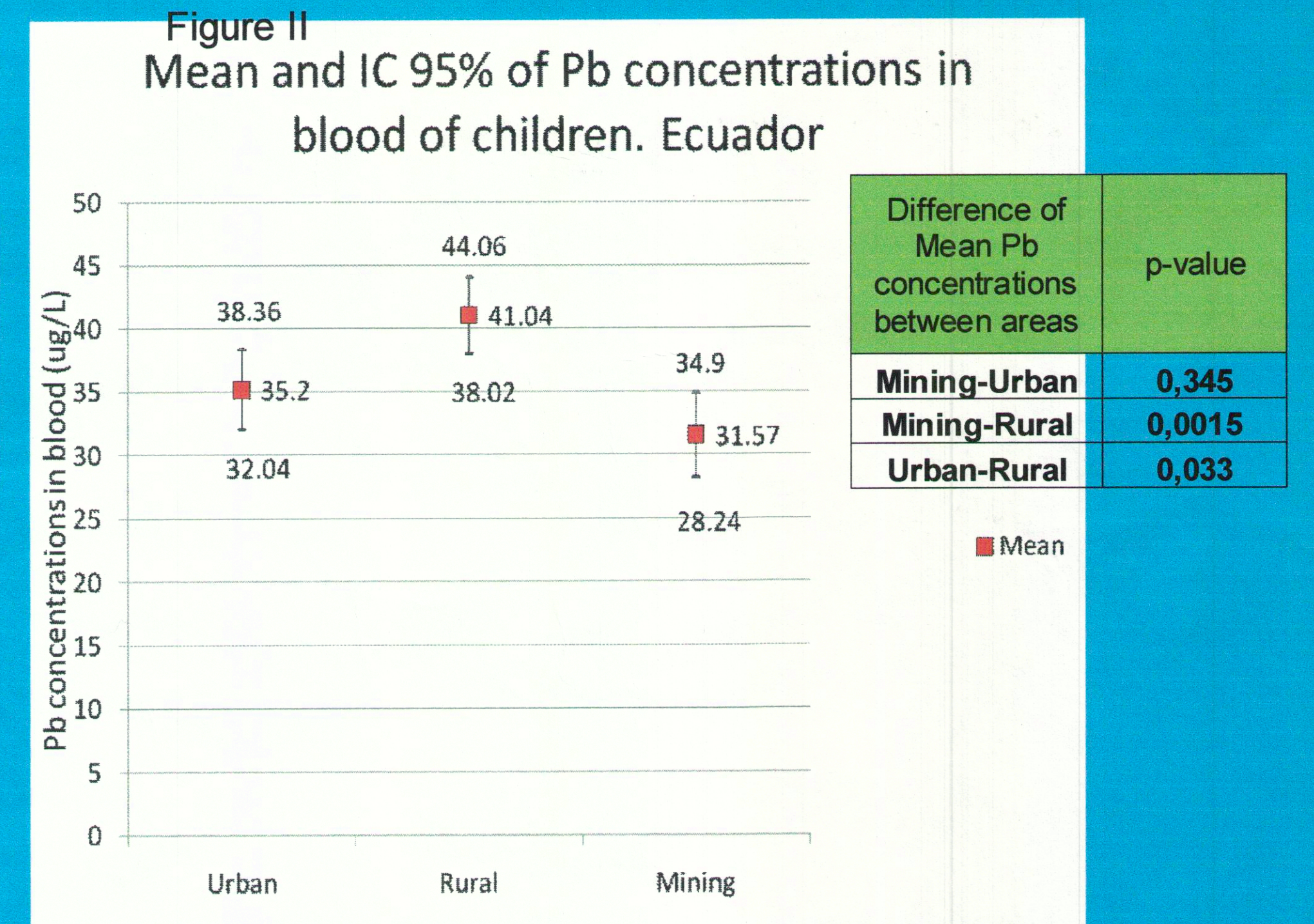
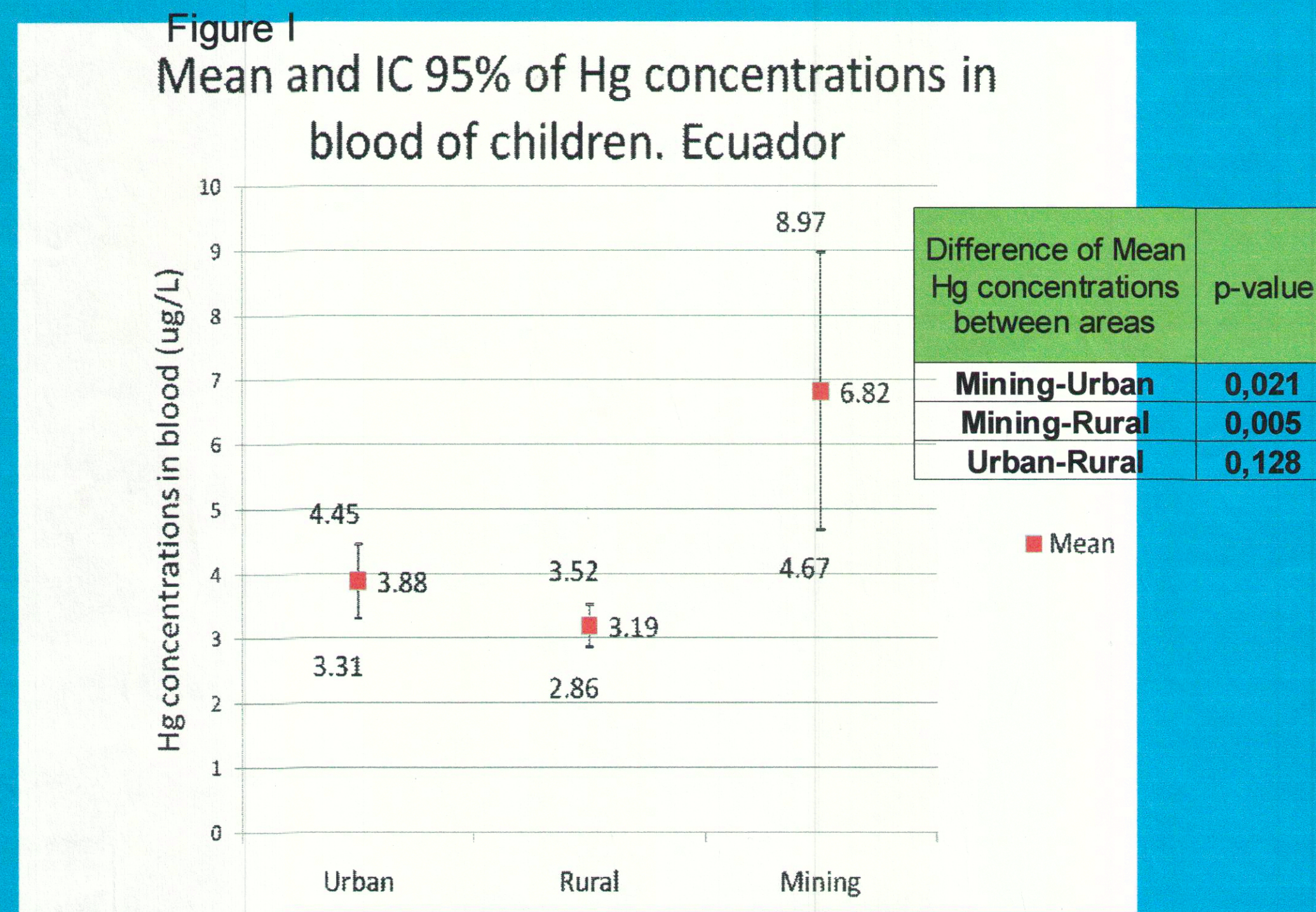


Table I

Country	Area	Cd (µg/L) Median	Hg (µg/L) Median	Pb (µg/L) Median
Ecuador	Urban Area	0,26	2,83	32,39
	Rural Area	0,32	2,61	39,19
	Mining Area	0,29	4,77	29,70
Sweden	Urban Area	0,09	0,47	11,17
	Rural Area	0,11	0,64	13,98
	Industrial Area	0,11	0,94	13,19
Slovakia	Urban Area	0,14	0,51	22,10
	Rural Area	0,13	0,28	20,41
	Industrial Area	0,14	0,30	36,58

Table I

WP I:8 EXPOSURE TO MERCURY IN GOLD MINERS AND GOLD BUYERS IN ECUADOR.

104 miners and 22 gold buyers were included in a survey in the south of Ecuador. This information was added to other cohort. Blood and urine samples were taken and neurological tests were applied. Association among variables are presented in Figures I and II.

Table I shows different levels of mercury in both groups.

Other results about genetic polymorphism are included in Table II and Figure III.

Other analyses have been done and in the next future all the information will be considered for statistical calculations.

Conclusions

- High Hg⁰ exposure in small -scale gold-mining; especially in gold buyers, who burn gold amalgam every day
- Intermittent Hg⁰ exposure in miners; decrease half-time of U-Hg 50 days
- Association between Hg biomarkers and neurological tests
- Genetic influence on Hg elimination(?) and neurotoxicity(?)

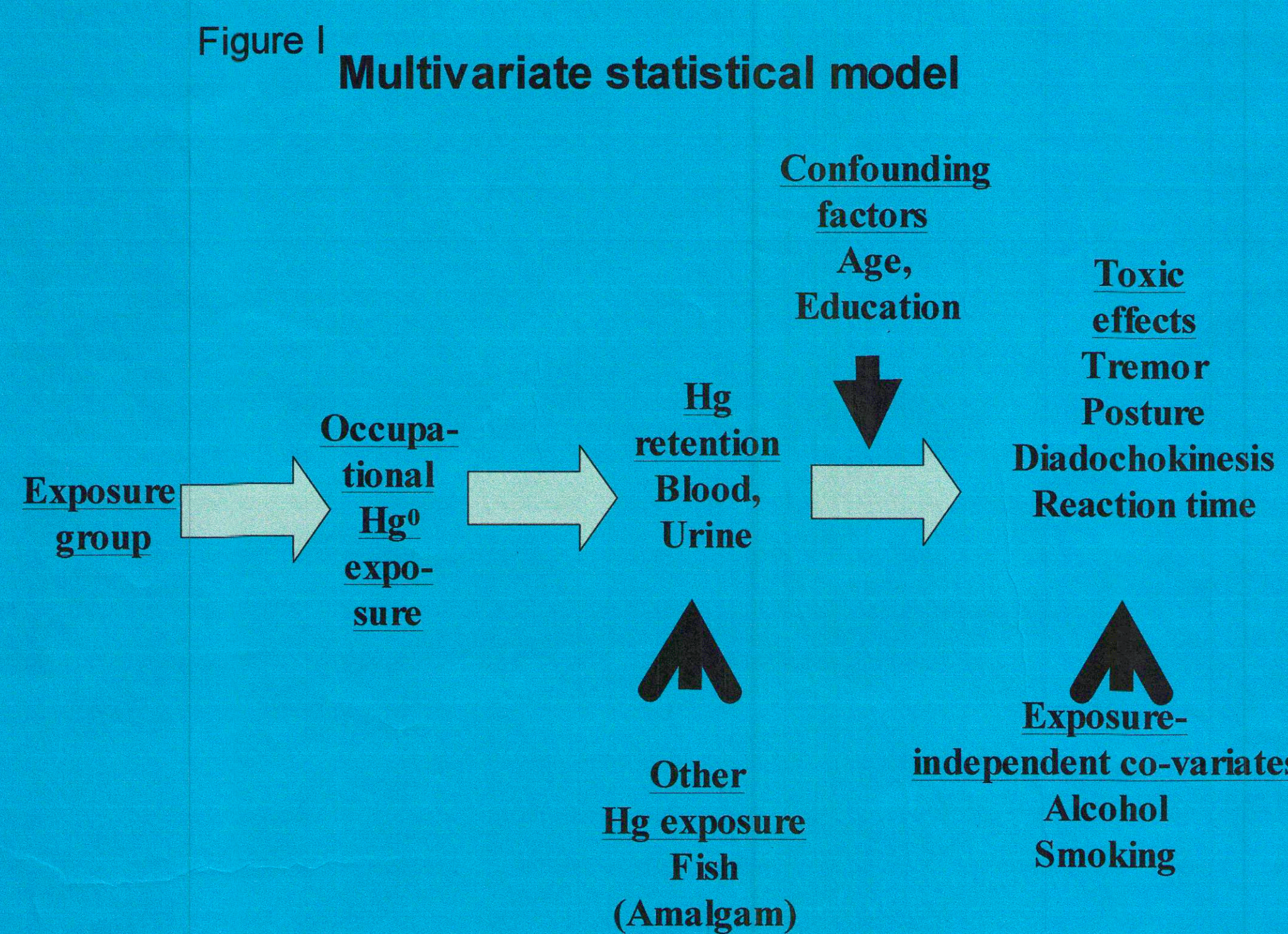


Table I Biomarkers of mercury exposure

Group	N	Hg levels (medians)		
		B-Hg (µg/L)	P-Hg (µg/L)	U-Hg (µg/g crea)
Referents	72	5.0	1.4	1.6 (-5)
Miners	200	5.2	1.9	3.3 (-180)
Buyers	37	30	21	37 (-400)

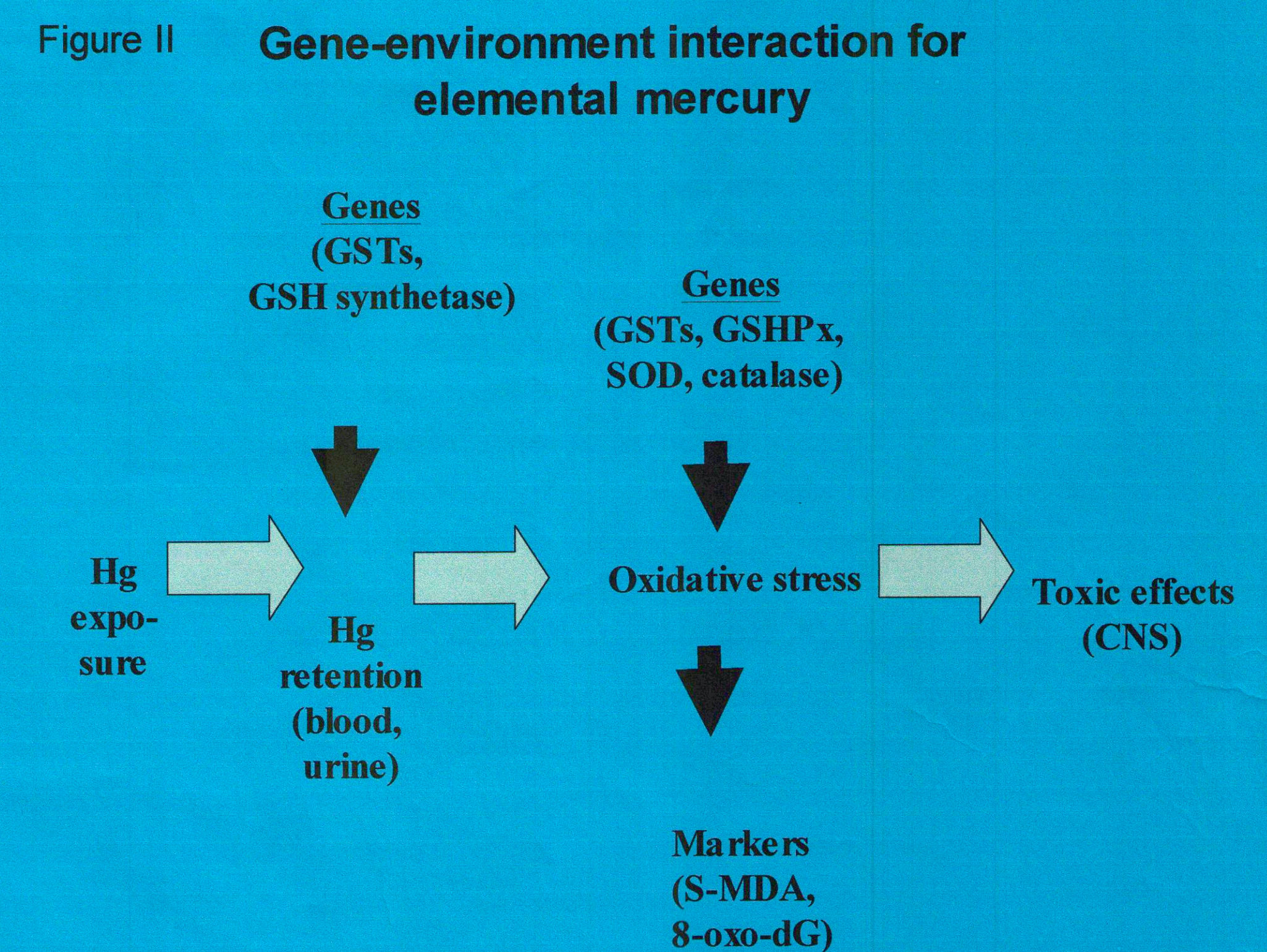
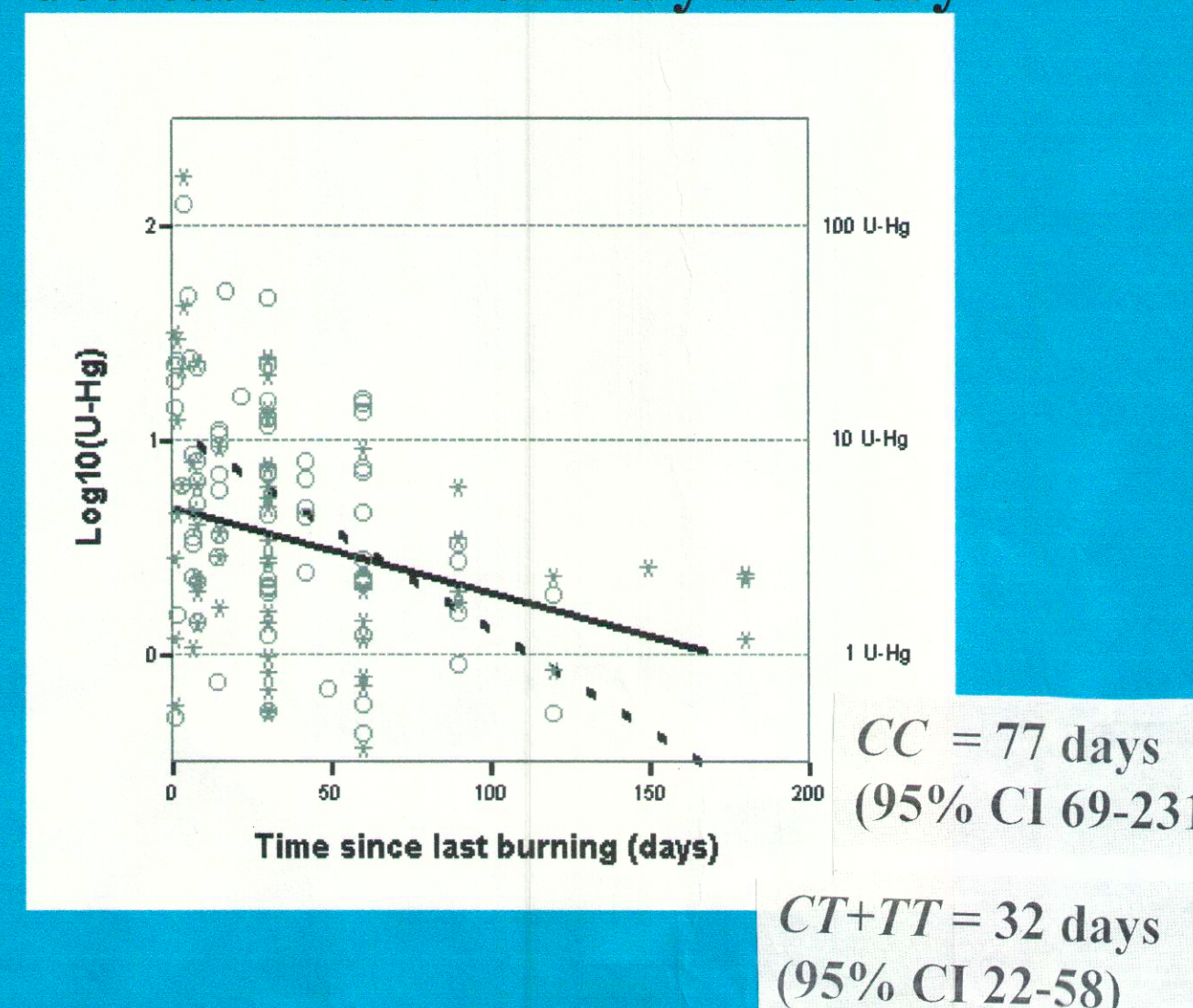


Table II Gene-environment interaction: Glutathione synthetase vs. blood mercury

Geno-type	Enzyme activity	B-Hg (µg/L; medians)			
		Ref	Empl	Aut	Buyers
GCLM-588	CC	4.7	5.1	4.2	22
	CT or TT	5.2	5.8	9.4	26

Covariates
Occupation: P<0.01
Genotype: P<0.01
Interaction: P=0.08

Figure III Genotype (GCLM-588) vs. decrease rate of urinary mercury



WP III:1 WOMEN EXPOSURE TO HEAVY METALS IN ECUADOR.

Fifty five women from the Rural Area (Tenguel) were studied about exposure to heavy metals and possible associations with health.

Twenty five blood samples of the Urban Area women were also taken. This part of the study is still in process.