

LEVELS OF ORGANOCHLORINE PESTICIDE RESIDUES IN HUMAN BLOOD IN AHMEDABAD

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Organochlorine compounds released into the environment enter living organisms and become biologically concentrated. The present work was an attempt to describe the preliminary results of our analysis on the residues of persistent organochlorine insecticides in the human blood collected from the general population of Ahmedabad, India.

The blood samples from 18 male healthy volunteers of Ahmedabad (urban) area, who participated after giving their informed consent. Blood samples were analyzed for the presence of residues of DDT, HCH and HCB. Subjects were requested to provide information on their demographics, dietary habits and smoking status.

Standard reference materials (SRM) grade of pp'-DDT, pp'-DDE, op'-DDT, pp'-DDD, α -HCH, β -HCH, γ -HCH and HCB were obtained from M/S AccuStandard, USA. The serum samples were analyzed by GC-ECD for the residues of DDT, HCH and HCB and their results are shown in Table 1. Serum level of pp'-DDE, op'-DDT, pp'-DDD and pp'-DDT ranged from 10.43-38.33, 0.42-2.41, 0.77-4.43, 3.66-24.06 with a mean of 20.85, 1.15, 2.03 and 9.28 $\mu\text{g/L}$ respectively. However, the Σ DDT (equivalent sum of pp'-DDE, op'-DDT, pp'-DDD and pp'-DDT) content in serum samples had a mean of 32.61 $\mu\text{g/L}$ and ranged from 21.17-54.47 $\mu\text{g/L}$. pp'-DDE was the major

metabolite and it contributes about 64 % of the Σ -DDT. The ratio of DDE to Σ DDT ranged from 0.39 to 0.93 (mean \pm SE; 0.64 ± 0.03) and followed the normality pattern

All the samples had presence of the three residues of HCH. Levels of α -HCH, β -HCH and γ -HCH in serum samples had a mean of 4.49, 35.06 and 1.69 $\mu\text{g/L}$ respectively. β -HCH contributed about 85 % of the total HCH (equivalent sum of α -HCH, β -HCH and γ -HCH). HCB was identified in 7 samples in the range of 0.13 to 0.27 $\mu\text{g/L}$.

The observed trend for total DDT and total HCH are comparatively lower than the earlier reports from India which may be due to the restriction on use of these pesticides in agriculture. The toxicological implications of the observed findings could not be examined very accurately as the sample size is small, however, it serves as a basis of baseline data.

Table 1. Organochlorine insecticides in human serum samples ($\mu\text{g/L}$)

Compound	No*	Range	Median	Mean \pm SE
pp'-DDE	18	10.43 - 38.33	20.74	20.85 ± 1.84
op'-DDT	15	0.42 - 2.41	0.99	1.15 ± 0.12
pp'-DDD	18	0.77 - 4.43	1.60	2.03 ± 0.28
pp'-DDT	17	3.66 - 24.06	7.65	9.28 ± 1.30
Σ DDT	18	21.17 - 54.47	29.63	32.61 ± 2.32
α -HCH	18	1.00 - 9.16	3.62	4.49 ± 0.73
β -HCH	18	20.11 - 82.09	30.25	35.06 ± 3.50
γ -HCH	18	0.72 - 3.09	1.54	1.69 ± 0.15
Σ HCH	18	22.55 - 91.06	37.77	41.23 ± 3.77
HCB	7	0.13 - 0.27	0.21	0.20 ± 0.02

* Number of positive samples