

## Relationship Between the Serum Chlorpyrifos Level and the Development of Intermediate Syndrome Following Acute Organophosphate Poisoning

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**Introduction:** We previously reported that acetylcholinesterase inhibition only partially explains the development of intermediate syndrome (IMS) spectrum disorder (1,2). The objective of this study was to assess the association between serum chlorpyrifos and the development of the IMS spectrum disorder. **Methods:** 2ml of blood was collected to an EDTA tube and centrifuged promptly and plasma was separated and frozen at  $-20^{\circ}\text{C}$  until analysis in 43 symptomatic acute chlorpyrifos patients on admission, 1 hour, 4 hours, 12 hours, 24 hours following admission and daily thereafter. Serum chlorpyrifos levels were assessed using high performance liquid chromatography. To represent the amount of circulating chlorpyrifos level during first 24 hours and 48 hours following admission, area under the curve (AUC) was calculated by plotting the serum chlorpyrifos concentration against time. Mann Whitney U (MWU) test was used to compare the groups. **Results:** The 24h and 48h AUC for serum chlorpyrifos were calculated in 43 and 40 patients respectively. There was a significant difference between the 2 groups in both the 24h and 48h AUC of serum chlorpyrifos (Table)

Table 1

	IMS spectrum	Non-IMS	P Value
24h-AUC (Median $\mu\text{M}\cdot\text{h}$ (IQR))	35.64 (14.00- 52.42), n=25	15.42 (3.95 - 27.51), n=18	0.0159
48h-AUC (Median $\mu\text{M}\cdot\text{h}$ (IQR))	55.45 (29.78- 80.73), n=22	21.43 (5.15 - 37.58), n=18	0.0027

Influence of the poison load (plasma chlorpyrifos AUC) on the development of IMS spectrum disorder. Conclusions: The development of IMS spectrum disorder is associated with higher circulating chlorpyrifos concentrations in blood as well as more severe acetylcholinesterase inhibition. **References:** 1. Red blood cell acetylcholinesterase inhibition and the intermediate syndrome Jayawardane P, Dawson A, Buckley N, Senanayake N Eyer P, *Clinical Toxicology*, 2008; 46:396. 2. The spectrum of intermediate syndrome following acute OP poisoning: A prospective cohort study from Sri Lanka Pradeepa Jayawardane, Andrew Dawson, V H Weerasinghe. L Karalliedde, N Buckley, N Senanayake *PLoS Med*, 2008; 5(7):1143-1152.