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# Presence of organochlorine pesticides in breast milk samples from Colombian women

Ximena Rojas-Squella <sup>a</sup>, Laura Santos <sup>a</sup>, Wolfram Baumann <sup>b</sup>, Diana Landaeta <sup>c</sup>, Adriana Jaimes <sup>a</sup>, Juan C. Correa <sup>c</sup>, Olga L. Sarmiento <sup>d</sup>, Juan Pablo Ramos-Bonilla <sup>a</sup>

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## Abstract

The presence of Organochlorine Pesticides (OCPs) in biological and environmental samples has been studied for decades in many countries. Nonetheless, studies in Latin American countries like Colombia have been scarce. Determining the presence of OCPs in breast milk will be of relevance to assess exposures, potential health risks, and for surveillance among Latin American populations.

Thirty-two breast-feeding mothers were selected to voluntarily participate in the study. Breast milk samples were analyzed for 10 OCPs ( $\alpha$ -,  $\beta$ -,  $\gamma$ -,  $\delta$ -HCH, Heptachlor,  $\alpha$ -,  $\gamma$ -Chlordane, 4,4' DDT, 4,4' DDE, 4,4' DDD). Milk samples were analyzed using liquid-liquid extraction, followed by sulfuric acid clean-up, and quantified using GC/ $\mu$ ECD. Results were confirmed by GC/MS. OCPs concentrations were normalized using fat content. In all but one sample, 4,4' DDE was quantified in concentrations ranging between  $<17$  and  $14\,948\text{ ng g}^{-1}$  (ng of OCP per g of lipids), with a mean value of  $203\text{ ng g}^{-1}$ . One woman had 4,4' DDE concentrations that were orders of magnitude above the average concentrations observed worldwide. Concentrations of 4,4' DDE in

a second breast milk sample collected in a different time period of lactation from a sub-group of 13 women from the original participants, showed no statistically significant difference with the concentrations found in the first sample. Based on the results obtained from the Persistent Organic Pollutants Global Monitoring Plan report of 2009 of the Stockholm Convention, Colombia ranks fourth from bottom to top in terms of 4,4' DDE average concentrations.

## Highlights

► Chlorine pesticides were quantified in breast milk samples collected in Colombia. ► For the study, 32 women were recruited in the city of Bogota. ► 4,4' DDE concentrations ranged between <25 and 14 948 ng g<sup>-1</sup> (median = 126 ng g<sup>-1</sup>). ► 4,4' DDE average concentration was similar to the results from other countries. ► Results suggest no significant changes in pesticide concentration during lactation.

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## Keywords

Breast milk; Organochlorine pesticides; Biomarker of exposure; Colombia

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