

## PERSISTENT ORGANOCHLORINE COMPOUNDS IN BREAST MILK FROM TWO CONSECUTIVE LACTATIONS OF THE SAME DONORS

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### Introduction

The concentrations of organochlorine compounds in breast milk depend on two processes: their life spanning bioaccumulation in the adipose tissue and excretion with milk during lactation.

Assuming that lactation can be an important process for eliminating organochlorine compounds from the human organism, an attempt was made to understand how consecutive deliveries and the following lactations impact the organochlorine compound levels detected in human milk.

The excretion of the examined compounds during lactation is much higher than the intake of these compounds with the diet (1), which may imply that the tissue deposits of the organochlorine compounds in women decrease with consecutive lactations.

Literature provides different perspectives on the impact of consecutive lactations on the organochlorine compound levels in breast milk (2, 3, 4, 5). Noren (2) noted a decrease in DDE and PCBs levels in the donors' milk following three consecutive deliveries and the lack of variances in  $\beta$ -HCH and HCB concentrations. For one donor, Vaz (5) reported a decrease in concentrations of all the compounds under examination during three consecutive lactations. Hong (6) indicates that the basic factors affecting the concentrations of these compounds include the donors' age, number of children, and duration of breast-feeding after each delivery.

### Materials and Methods

The material examined in this study was breast milk from 2 donors' two consecutive lactations. The interval between the lactations was 8 months for one donor and 2 years for the other donor. Milk samples were analyzed for the presence of: p,p'-DDT, p,p'-DDE, p,p'-DDD,  $\alpha$ -,  $\beta$ -,  $\gamma$ -HCH and  $\Sigma$ PCBs, using the gas chromatography method with an electron capture detector. 112 milk samples were examined in all (Table 1).

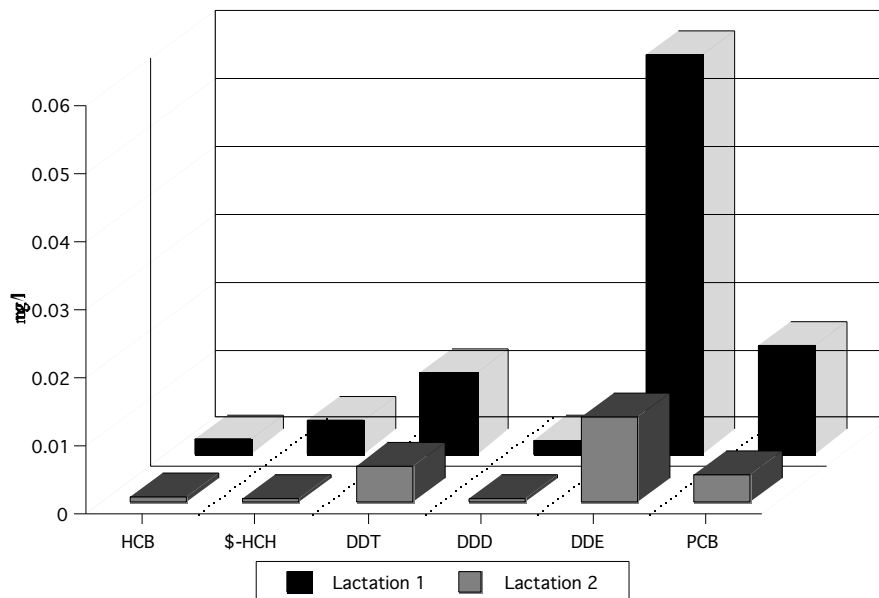
Table 1. Number of examined samples in consecutive lactations

Donor	Lactation	Number of samples
1	First	16
	Second	21
2	First	33
	Second	42

## Results and Discussion

This study has indicated that, for the mother with a shorter interval between lactations, mean concentrations of the examined compounds were higher in the milk of the first lactation than that of the second (Fig. 1). These variances were statistically significant for each compound examined.

Figure 1. Persistent organochlorine compounds in breast milk - interval between lactations: 8



months.

For the other donor whose second lactation began after 2 years, the differences in the concentrations of compounds followed a different pattern. Mean levels of HCB,  $\beta$ -HCH, DDD, and PCBs in her milk were higher during the first lactation, just like it was the case for the first donor. However, these differences were not statistically significant. At the same time, the concentrations of DDT and DDE after the second delivery were slightly higher, with the variance being statistically significant. Also noted was the lack of decreasing DDT and DDE levels in the other donor's milk during the second lactation. This may be related to a relatively fast complement of tissue deposits of these compounds during a longer (2 year) interval between the lactations (Fig. 2).

The woman's organism ability to quickly complement tissue deposits of the organochlorine compounds has been confirmed in our earlier studies (7), where the mean concentrations of these compounds in primaras and multiparous females were compared, also for the donors' age. No decrease in mean concentrations of the studied compounds was reported for multiparous females versus primaras. Mean concentrations of HCB and  $\Sigma$ HCH were similar in both donor groups, with DDT and PCBs being even higher for multiparous females. Such results may stem

from the age of the women under examination. The number of deliveries did not affect the mean concentrations of HCB and ΣHCH. For women with the same number of children, DDT, its metabolites, and PCBs increased with age. Other authors (8, 9, 10, 11) have reported similar results showing that organochlorine compound concentrations in breast milk increase with donors' age.

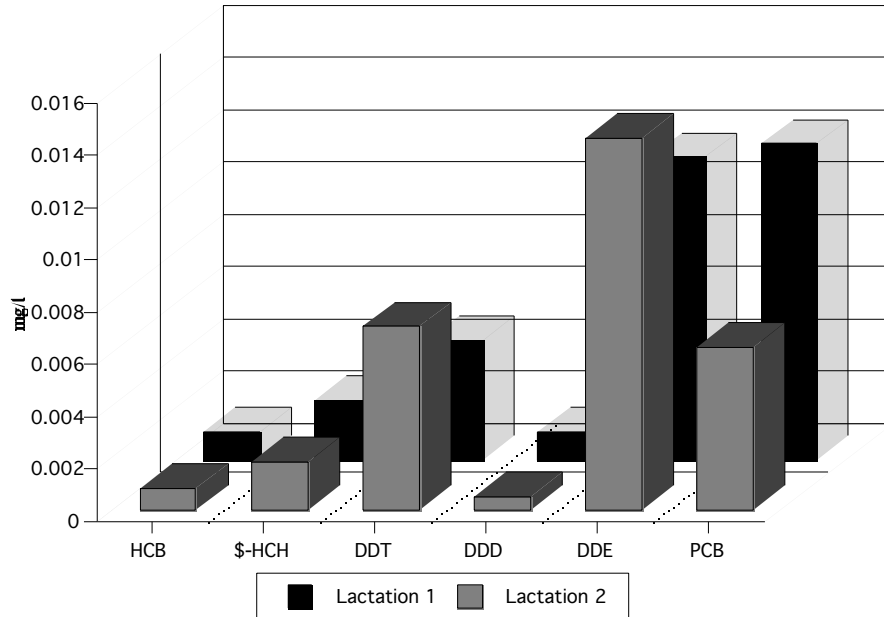


Figure 2. Persistent organochlorine compounds in breast milk - interval between lactations: 2 years.

Age, more than the number of deliveries, seems to affect the concentrations of organochlorine compounds in breast milk. This phenomenon may imply that the deposits of these compounds complement in women's tissues after lactation quickly. This is confirmed by the results of this study, where higher concentrations of DDT and DDE were detected in the second lactation milk of a woman with a longer interval between deliveries.

### References

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