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100 percent of Spanish people carry at least 1 type of pesticide

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A study carried out by researchers from the Department of Radiology and Physical Medicine of the University of Granada, in collaboration with the Andalusian School of Public Health, found that 100% of Spaniards analysed had at least one kind of persistent organic compound (POC's), substances internationally classified as potentially harmful to one's health, in their bodies. These substances enter the body trough food, water or even air. All of them tend to accumulate in human adipose tissue and easily enter into the organism through the aforementioned mediums.

The study, conceived by Juan Pedro Arrebola Moreno and directed by professors Piedad Martin Olmedo, Nicolas Olea Serrano and Mariana F. Fernandez Cabrera, measured the contamination levels of some persistent organic compounds (POC's) in a sample of the adult population from two areas, an urban one (Granada capital city) and a semi-rural one (Motril), and intended to find the determining factors associated with such levels: diet, lifestyle, activities or residence.

A total of 387 adults, from both sexes, were volunteers for surgeries in hospitals taking part in the study (Santa Ana de Motril and San Cecilio de Granada Hospitals). Once the volunteers had given consent, a sample of their human adipose tissue (fat) was taken during surgery and they answered a questionnaire about their place of residence, lifestyle, eating habits and activities throughout their life.

The researchers analysed the samples and measured 6 different POC concentration levels: DDE, a principal metabolite in DDT (a pesticide used in Spain until the 80's); hexachlorobenzene, a compound used as fungicide and currently released by industrial processes; PCB's: compounds related to industrial processes; and Hexaclorociclohexano, used as an insecticide and currently used in scabies and pediculosis treatment.

The study carried out by the University of Granada concluded that 100% of subjects analysed had DDE in their bodies, a substance banned in Spain, and other very frequent components such as PCB-153 (present in 92% of people), HCB (91%), PCB-180 (90%), PCB-138 (86%9) and HCH (84%).

Juan Pedro Arrebola Moreno explains that higher levels of toxic substances were detected in women compared to men and in older volunteers compared to younger people, 'possibly due to the great persistence of these substances in the environment, which results in their biomagnification in the food chain and in their bioaccumulation over time.' The scientist added that there is another theory known as 'Efecto Cohorte' (Cohort effect) that explains the high quantities of these substances in older people. According to this theory, those born in periods of higher contamination suffered the consequences more than those born with the current bans on such pesticides.

The impact of diet

This study indicates that diet is an important factor in POC concentration, as the ingestion of some aliments, particularly those of animal origin and high fat content, triggers a greater presence of these toxic substances in the human organism.

Juan Pedro Arrebola Moreno states, 'There are few studies in Spain measuring POC levels in wide samples of the population, which means that some compound levels in the general population are unknown.' Consequently, this study will improve the knowledge of such levels, and will identify those groups at higher risk of exposure, which is the first step for subsequent follow-up studies determining the cause-effect relations.

This study is part of a project subsidised by the FIS (Sanitarian Investigation Fund) and by the Andalusian Regional Government, and in which the University of Granada, the Andalusian School of Public Health, and the Santa Ana de Motril and San Cecilio de Granada Hospitals take part.

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