



Exposure to organochloride pesticides affects semen quality in young men.

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Two in 10 young people in South East Spain have poor sperm density, which involves requiring more time to accomplish fertilization. The most common means of exposure to pesticides is food and other household products

According to a study conducted at the University of Granada, combined exposure to organochlorides significantly alters semen quality in young people from South East Spain. Having a low number of spermatozoa taking the levels established by the World Health Organization (WHO) as a reference can delay fertilization.

The analysis was conducted by Clemente Aguilar, from the Medical Research Laboratory of the University Hospital San Cecilio, Granada, Spain, and coordinated by Marieta Fernández, Marina Lacasaña and Nicolás Olea (University of Granada), basing on a sample of 280 volunteer students aged 18-23 years from the University of Almería, Spain.

The starting point was the hypothesis that organochlorine pesticides cause alterations in semen quality parameters, as they alter homeostasis of male hipotalamus-hypophysis-gonads axis. The risk increases with exposure to different pesticides, even in low concentrations.

The results obtained showed that young people from South East Spain scores in a medium position –tending to the highest positions– with the semen quality reported in other European countries. Semen quality was measured after the total spermatric number (TSN) and the total sperm motility.

Semen quality has been found to be influenced by many factors as lifestyle –education level and job–, physical and biochemical parameters –obesity, sexual hormone levels, lipids in blood, etc– and environmental exposure.

Ingesting Pesticides Through Food

The most common means of exposure to pesticides among the general population is through food and other household products. From the 18 pesticides found in the participants' blood, some are forbidden in Spain, as DDT, although others as the fungicide called vinclozolin –employed in vineyards and citrus groves– are legal in this country. All the samples analysed had at least one pesticide in considerable concentrations, and the average number of pesticides detected was 11, ranging between 4 and 17. Most of the participants (62%) had residues of 10-14 different pesticides in the blood.

While exposure to certain organochlorides proved to increase total spermatric number and total sperm motility levels, other pesticides have the adverse effects and are associated to a reduction in these levels. This might be due to the fact that some pesticides are considered to be slightly estrogenic endocrine disruptors –as it is the case of endosulfan sulphate, lindane and p,p-DDT–, while others combine their clearly antiadrogenic activity to a weak estrogenic activity –as it is the case of p,p-DDE and vinclozolin.

Malformations in Spermatozoa

The study proved a strong correlation between exposure to vinclozolin and malformation rates in spermatozoa. Although no evidence was found on the potential effect of vinclozolin on humans, further experimental tests should be conducted for verification.

The fact that exposure to organochloride compounds significantly affects semen quality should not be disregarded in any epidemiologic study aimed at evaluating the influence of environmental factors. However, “foreseeing the final effect of pesticides on health is not easy, basically because we are exposed to multiple environmental pollutants that interact in different ways, making it difficult to foresee their final effect” –Clemente Aguilar warns.

The University of Granada researcher concludes that, to reduce or withdraw as many pesticide residues as possible from food “it is very important to wash food with water and soap, as it cuts the surface greasy film of these products, which is the part containing more residues”.

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