

Directly to your hormones

Disruptive Food Guide

Pesticide residues
with endocrine
disrupting
properties in
Spanish food

ecologistas
en acción



For the third consecutive year Ecologists in Action publishes '**Straight to your hormones**', a study that measures the presence of pesticides and endocrine disruptors found in food products marketed in Spain.

Our country is the largest consumer of pesticides in Europe. This is borne out by the latest data published by Eurostat for 2017, which unfortunately again places it as the European leader with the marketing of 71987 tonnes¹ of pesticides.

The aim of this report is to provide the population with transparent and quality information on the food products they are consuming, to show the alternatives for safer consumption and to demand that all public administrations take more ambitious measures to protect people's health.

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¹ EUROSTAT, *Agri-environmental indicator consumption of pesticides*, https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_consumption_of_pesticides#Analysis_at_EU_and_country_level (fecha de consulta: 7 de abril de 2020).

What are hormonal contaminants?

Since the beginning of the 20th century, it has been known that some chemical substances can interfere with the hormonal or endocrine system of many animal species, including humans, and have adverse effects on their health.

Endocrine disruptors interfere with the natural action of hormones, alter balance and can alter physiology throughout an individual's life from fetal development to adulthood.

These contaminants are associated with major diseases that cause damage to the male reproductive system, damage to the female reproductive system, tumors in hormone-dependent organs, alterations in the development of the neurological system, metabolic diseases, disorders of the neuroimmune system and cardiovascular diseases.

Features of endocrine disruptors

They can act at **very low doses**.

Pregnancy, childhood and adolescence are particularly vulnerable to exposure to these substances.

The exposure dose does not stop the effect. For example, the major adverse effects of exposure to HCB are observed at low doses, and in the case of BPA (Bisphenol A) at intermediate doses.

Cocktail effect. They can act together in an additive or synergistic way, so that the effects of exposure to a mixture of DCS can be enhanced.

Its negative effects can manifest themselves many years after the exposure occurs. In addition, the effects of prenatal exposure manifest themselves primarily in

Presence of hormonal contaminants in food

The Spanish Food Safety and Nutrition Agency (AESAN) has published the data available from the pesticide residue programme in food in Spain for the year 2018. The total number of analyses of pesticides carried out by Spain during 2018 on 2,711 food samples was 467,443. This figure places Spain at the bottom of the European ranking, specifically in the penultimate month, with 5.6 samples per 100,000 inhabitants, while the European average is 17.6.

The total number of pesticides analyzed in 2018 was 7002. The analyses include substances that are authorized for use and also a high number of unauthorized pesticides (such as DDT, lindane or endosulfan). However, not all these substances were analysed in all samples.

The results of the analysis of pesticides in food in Spain in 2018 show that the rate of non-compliance with Spain, i.e. samples with residues above the maximum residue levels (MRLs), was 2,1 % in 2018. Therefore, it was a percentage higher than 1,8 % in 2017. The EU data were significantly higher, with a non-compliance of 4.1% in 2017 and 4.5% in 2018.

The results show that the Spanish population is exposed to a high number of pesticides through food. **Pesticide residues have been found in 34 % of the samples (927 out of 2.711 samples) of food. This percentage increases to 41.69 % for fruits and vegetables.**

2 EUROPEAN FOOD SAFETY AUTHORITY,(EFSA), The 2018 European Union report In pesticide residues in food, <https://efsa.onlinelibrary.wiley.com/doi/10.2903/jfsa.2020.6057>, p. 16 (Accessed on 7 April 2020)










At least 62% of the amount in kg of pesticides for which public data are available were not subject to the programme for monitoring pesticide residues in food.

The EDC pesticides found according to PAN Europe criteria in Spanish food are 2,4-D, Bifenthrin, Captan, Chlorfenapyr, Chlorothalonil, Chlorpyrifos-Methyl, Cypermethrin, Cyproconazole, Deltamethrin, Dimethoate, Diothiocarbamates (including Mancozeb), Epoxiconazole, Febuconazole, Phenoxycarb, Fipronil, Flutriaph, Glyphosate, Iprodion, Lambda-Cyhalothrin, Linuron, Malathion, Methiocarb, Methomyl, Myclobu-Tanil, Penconazole, Pirimicarb, Prochloraz, Propamocarb, Propiconazole, Pyrimethanil, Piriproxifen, Spiromesifen, Tebuconazole, Thiocloprid, Thiophanate-methyl and Triadimenol.

List of the 10 most contaminated foods with endocrine disrupting pesticides

Spanish food contains at least 36 pesticides with the capacity to alter the hormonal system according to the criteria of PAN Europe, or 72 EDC pesticides if we take into account the criteria of the European Commission's working document. If we also include two of the banned substances detected (DDT and endosulfan), the figures rise to 38 and 74 respectively.

In addition, programmes for monitoring pesticide residues in food do not analyse all substances in use and, in order to reduce costs, only a limited number of pesticides are analysed in each food. Therefore, some foods may contain more residues of different pesticides than the data show.

Product	Number of EDC pesticides	Total number of pesticides
Peppers 	13	33
Apples 	11	31
Table grapes 	9	41
Tangerines	9	33
Pears 	9	32
Lemons 	8	23
Grapefruit 	8	22
Oranges 	7	27
Tomatoes 	7	27
Lettuce 	7	14

The table lists the residues found in all samples of that food together. This means that some samples may be free of pesticides and others may have several pesticides at once.

The same food sample may contain several residues. An example is a sample of table grapes from Morocco in which 11 different pesticides were detected, of which two are endocrine disruptors and appear of Spanish origin in which three endocrine disrupting pesticides were found out of the total of 11 different pesticides detected in the sample analysed.

Listing of the 10 foods plus pesticide residues (Total number of pesticides)

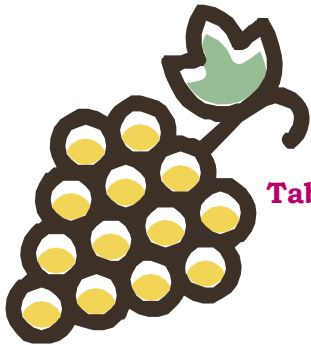
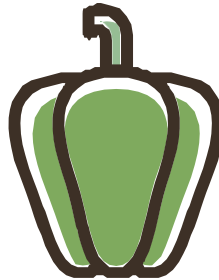
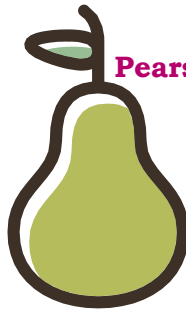


Table grapes / 41



Piments / 38



Pears / 32



Apples / 31



Tangerines / 33



Tomattes / 27



Oranges / 27



Lemons / 23



Grapefruit / 22



Bananas / 19

Unauthorised pesticide residues

Of the 137 different pesticides that have been found in Spanish foods marketed in 2018, it is surprising that 53 of these, i.e. 39%, correspond to pesticides that are not currently authorised.

We do not know the cause of the presence of these unauthorized pesticides in our foods, although we can consider several reasons: exceptional authorizations, import tolerance in order to meet the needs of international trade, historical contamination caused by persistent toxicants (such as DDT), or the illegal use of unauthorized pesticides.



Fruits and vegetables

Fruit and vegetables are the group where the highest number of pesticide residues (118 different substances) have been detected, according to PAN Europe criteria, 37 of which are endocrine disruptors.

A total of 37 EDC pesticide residues have been detected, 13 of which are substances not authorised in the European Union.

Approximately one third of the plaguicides detected in fruits and vegetables are endocrine disruptors.



Baby food

According to the results collected by EC-SAN in baby food (baby food and baby food), no pesticide residues were detected in any of the samples analysed. This may be due to the fact that the European Union imposes stricter limits on processed foods and exercises greater control over this group of foods³.

³ In general, the default value for MRLs on baby products is 0.01 mg/kg, with the exception of some pesticide residues, for which the lower MRL value applies.

List of the 10 most common endocrine disrupting pesticides

Pesticides detected	Number of samples
Pyrethrin	125
Chlorpyrifos	124
Pyriproxifen	71
Chloropyrifos-methyl	68
Dithiocarbamates, including mancozeb	52
Propiconazole	44
Tebuconazole	31
Deltamethrin	25
Bifenthrin	20
Prochloraz	16

Pyrimethanil followed by Chlorpyrifos are the two most frequently detected EDC pesticides in food residues. Specifically, pyrethrin was found in 125 food samples from eight different foods and chlorpyrifos in 124 from 19 different foods.

Proposals to reduce exposure to pesticides through food

1 Applying the regulations

There is a need for public administrations to ban endocrine disrupting pesticides as soon as possible, as provided for in Regulation 1107/2009 on pesticides.

2 Transforming the unsustainable industrialized agricultural system into an agro-ecological system

3 Facilitating production, distribution and access to pesticide-free and agro-ecological products

4 Recommendations to the population:

Eat fruit and vegetables daily, choose pesticide-free foods, local and seasonal; choose foods with less pesticide; wash and peel fruit and vegetables; feed babies natural products without pesticides. If this is not possible, it is preferable not to use fruits and vegetables from industrial agriculture and to opt for processed baby products.

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