

The Hidden Hormonal Effects of Substances in Foods-

Does what you're eating have adverse health effects on your nervous and immune systems?

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Chemicals that have the potential to interfere with different hormonal systems in the human body are becoming increasingly well recognized. These chemicals are referred to as *endocrine disruptors* and interrupt the normal body functions hormones regulate. Exposure to endocrine disruptors in wildlife has been shown to lead to changes in the populations of some bird species and physical changes in aquatic life in polluted lakes. In some instances, human exposure has even led to the development of cancers that persist over generations.

It is important to identify endocrine disruptors because these compounds can potentially elicit sinister effects. Unfortunately, they are very difficult to identify. Only a small fraction of chemicals used in industry interfere with hormonal processes, and some compounds that have been identified as endocrine disruptors also exist in nature. Humans can be exposed in many ways, with exposure in food being common. There is a short supply of well-designed tests to recognize endocrine disruptors, and the tests that do exist do not consider that an individual may be exposed to multiple endocrine disrupting compounds at once. Current tests also tend to focus on adverse effects in the reproductive system. While the reproductive system is incredibly important, it is possible that endocrine disruptors have effects in other body systems as well, such as the nervous and immune systems.

The aim of this investigation was to explore the hypothesis of whether it is possible for humans exposed to endocrine disruptors in food to experience adverse effects in their nervous and immune systems. Three common compounds with endocrine disrupting properties were investigated; these were the food preservative butylated hydroxyanisole (BHA), the fungicide tebuconazole, and the plant compound genistein. Humans are commonly exposed to all three of these compounds, and it is invaluable to realize their potential adverse effects on the hormone system, leading to unfavorable events in the nervous and immune systems. This investigation indicated that BHA and tebuconazole could interfere with calcium levels inside cells. Calcium has effects on both the nervous and immune systems, and it is important for cell signaling and a multitude of regulatory processes. Genistein has effects on inflammation in animals, and has even been shown to interfere with the physical development of neurons in certain brain regions. A future goal is to do more research on these three compounds and further clarify their effects.

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