

Common autism supplement affects endocrine system

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Plant-based diets are healthy. Plants are high in flavonoids. So flavonoids are healthy. At least that's the reasoning of many manufacturers of flavonoid-based nutritional supplements. But a University of Colorado Cancer Center study published this week in the journal *Hormones & Cancer* shows that may not be the case. Flavonoids tested in the study affected the endocrine system in ways that in one case promoted cancer and in another repressed it.

"Even outside these specific findings with cancer, what we're saying is that flavonoids are active and not always in good or even predictable ways," says Steven K. Nordeen, PhD, investigator at the CU Cancer Center and professor emeritus in the Department of Pathology at the CU School of Medicine.

His study explored the effects of the flavonoids luteolin and quercetin on cell models of breast and endometrial cancer. In over-the-counter supplement form, the first compound, luteolin, is commonly recommended for the treatment of pediatric autism spectrum disorders.

Nordeen and colleagues show that luteolin blocks some of the endocrine effects of the [hormone](#) progesterone. Work from another CU Cancer Center investigator, Carol Sartorius, PhD, had previously shown that progesterone expands a population of therapy-resistant, stem cell-like cells in some breast cancers. In the present work, Nordeen showed that luteolin blocked this increase – a beneficial effect. But then in an endometrial cancer cell model, luteolin had two deleterious effects. First,

it acted like estrogen to directly stimulate cancer cell growth and second, by again blocking progesterone's action, luteolin disabled the brake that progesterone puts on estrogen-dependent endometrial cancer growth.

What helps in breast cancer hurts in endometrial [cancer](#). But Nordeen says the most important issue is the simple fact that these flavonoids are active and we don't yet know how the body responds to the blood levels of flavonoids reached when taking supplements.

In the case of luteolin supplements for autism/spectrum, "You're giving prepubescent kids a supplement that affects the [endocrine system](#) and that's dangerous," Nordeen says.

He points out that "nutraceuticals" – which include flavonoid and other active-ingredient supplements – aren't FDA regulated to the degree that are medicines. This allows manufacturers to market supplements without fully testing nutraceutical products for efficacy or potential side effects.

"I'm not saying that flavonoids in a normal, plant-rich diet are bad," Nordeen says, "but caution is warranted when consuming additional flavonoids via supplements.

Detrimental effects of flavonoids are not without precedent. A [diet](#) of red clover can affect development and reproduction in livestock. And the New England Journal of Medicine documented breast development in prepubescent boys that was linked to the use of shampoos and balms containing lavender or tea tree oils containing [flavonoids](#).

"Because flavonoid supplements are widely used, we need to do the research necessary to understand their effects, both desirable and undesirable, in consumers using these products. We shouldn't be taking this stuff blindly because, just like prescription medicines, there can be unanticipated consequences," Nordeen says.

Provided by University of Colorado Denver

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