Mushrooms as good an antioxidant source as more colorful veggies

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Portabella and crimini mushrooms rank with carrots, green beans, red peppers and broccoli as good sources of dietary antioxidants, Penn State researchers say.

Dr. N. Joy Dubost, who recently earned her doctorate in food science at Penn State, measured the activity of two antioxidants, polyphenols and ergothioneine, present in mushrooms, using the ORAC assay and HPLC instrumentation, as part of her dissertation research. She found that portabella mushrooms had an ORAC value of 9.7 micromoles of trolox equivalents per gram and criminis had an ORAC value of 9.5. Data available from other researchers shows carrots and green beans have an ORAC value of 5; red pepper 10; and broccoli 12.

The ORAC assay, the most well known test of antioxidant capacity, focuses on the peroxyl radical, the most predominate in the human body. Free radicals, such as the peroxyl radical, are thought to play a role in the aging process and in many diseases, including cancer, Alzheimer's and atherosclerosis. Epidemiological studies have shown that those who eat the most fruits and vegetables rich in antioxidants have lower incidence of these diseases.

Dubost detailed her results in a paper, Quantification of Polyphenols and Ergothioneine in Cultivated Mushrooms and Correlation to Total Antioxidant Capacity Using the ORAC and HORAC Assays, presented Monday, June 26, at the Institute of Food Technologists meeting in Orlando, Fl. Her co-author is her dissertation adviser, Dr. Robert

Beelman, professor of food science.

Dubost explains that assays are a first step toward determining how effective a food is in providing protection against oxidative damage. Anti-oxidants inhibit increased rates of oxidation, which can damage proteins, lipids carbohydrates and DNA.

She adds, "The ORAC assay does not tell what happens in the human body but this assay is currently under investigation as to how it can predict physiological activity."

The Penn State study showed that the anti-oxidant effect of mushrooms is due primarily to the presence of polyphenols. Dubost and Beelman had earlier identified mushrooms as an abundant source of the anti-oxidant, ergothionene.

Dubost notes, "Evidence suggests that erogothioneine is biologically very important and, even though the assay used does not show it contributes to total antioxidant activity in the mushrooms, it may significantly contribute antioxidant activity in the body."

The ORAC values found in the latest study indicate that mushrooms are potent anti-oxidant sources. The research revealed that, of the mushrooms tested, portabella mushrooms and crimini mushrooms have the highest ORAC values. Criminis, which are brown, are otherwise similar to the popular white button mushroom, the one mostly commonly consumed in the U.S. The white button mushroom has an ORAC value of 6.9, above tomato, green pepper, pumpkin, zucchini, carrot, and green beans.

Dubost says, "You don't have to eat only the vegetables with the highest anti-oxidant capacity to benefit. If you eat a variety of mushrooms along with a variety of other vegetables, you'll be getting a variety of

antioxidants."

Source: Penn State