

Antioxidants in Dried and Fresh Herbs

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Antioxidants, touted as beneficial for your health, potentially preventing degenerative, neurological and cardiovascular diseases like cancer and Alzheimer's, are found in the highest concentration in herbs and spices. The purpose of this project was to analyze and compare the antioxidant activity of fresh and commercially dried herbs. My hypothesis was that the fresh herbs would have higher antioxidant activity than the commercially dried herbs, and that the hydrophilic extracts would have higher antioxidant activity than the lipophilic extracts. Fresh and commercially dried samples of three different herbs were collected: thyme, oregano and basil. Fresh herbs were grown on St. Croix and commercial dried samples were purchased in St. Croix stores. Antioxidants were extracted using both aqueous and organic solvents. Antioxidant activity was determined using the ABTS/HRP/H₂O₂ decoloration method by collecting the samples and soaking them in solution then monitoring the extracts in ABTS solution by scanning them at 730 nm using a UV-VIS spectrophotometer and then reported as Trolox equivalent per grams dry weight. It was determined that the fresh oregano had significantly higher antioxidant activity than the commercially dried oregano, while the thyme and basil commercially dried samples had higher antioxidant activity than their fresh counterparts. Furthermore, the hydrophilic antioxidant activity in basil and oregano was higher than the lipophilic while thyme had higher lipophilic antioxidant activity than hydrophilic. Oregano had the highest total antioxidant activity (2088.508 $\mu\text{mol TE/g}$ dry weight). Thyme had the lowest for fresh herbs (200.4891 $\mu\text{mol TE/g}$) and basil had the lowest for the commercially dried herbs (513.6872 $\mu\text{mol TE/g}$).