Do interactions exist between lipophilic antioxidant compounds? Comparison of antioxidant capacity of lipophilic compounds from microplate assay and an online HPLC-TEAC method

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Abstract

Since several years, antioxidant compounds are of great interest due to their implication in protection against radicals. Several studies have tried to understand which kinds of interactions occur in complex mixtures or extracts, since a potent regeneration of an antioxidant by another one can increase or decrease the activity of a mixture of antioxidants. In this study, individual TEAC (Trolox Equivalent Antioxidant Capacity) values of pure lipophilic compounds were first determined using a microplate assay and an online LC-AOx method, with post-column reaction. Then, TEAC values of lipophilic extracts from *Solanum lycopersicum* L. were also determined using both methods. Differences were observed and significant interactions were suspected. To evaluate these interactions, mixtures of lipophilic compounds were prepared in variable proportions. TEAC value (n=3) of each mixture was determined using the microplate TEAC assay. Interaction effects were calculated and additive, antagonist or synergic effects were observed. Results showed HPLC-ABTS provides individual TEAC values without interactions but helps in the identification of compounds involved in antioxidant capacity, whereas microplate assay only provides TEAC values of mixtures including interactions.

Biography

Julie Le Grandois has completed her PhD in Analytical Chemistry in 2009 from University of Strasbourg (France). She is now Research Scientist in charge of the development of analytical methods at Aérial. She has published 11 papers in peer-review journals.

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