

## Accelerated Oxidative Resistance Profiling Test for Olive Oil using the Bruker microESR Electron Spin Resonance Spectrometer

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The microESR provides a novel easy-workflow electron spin resonance spectroscopy (ESR) method that provides free radical based metrics for the ability of an edible oil (e.g., canola, soy, palm, olive, etc.) to resist oxidation during an accelerated heating incubation (typically 30 minutes to 3 hours). The assay uses the microESR (electron spin resonance) benchtop spectrometer to measure free radical formation in the oil or liquid sample. The oil samples are incubated at a user defined time and temperature with a special reagent called a spin trap that reacts with free radicals to form microESR detectable 'radical adducts'. The concentration of radical adducts formed relates to the oxidative resistance of the edible oil. The resulting oxidation profile yields three metrics of interest ('**Lag Time**', Free radical '**End Point**' and Free radical '**Area**' under the oxidation profile curve). Shorter Lag Times and higher free radical End Point and Area values indicate a lower oxidative resistance of the oil sample. In this presentation we will show recent work with various categories of olive oil and comparison of these results with other traditional tests (e.g., OSI, peroxide value and  $K_{232}$ ,  $K_{268}$ ).