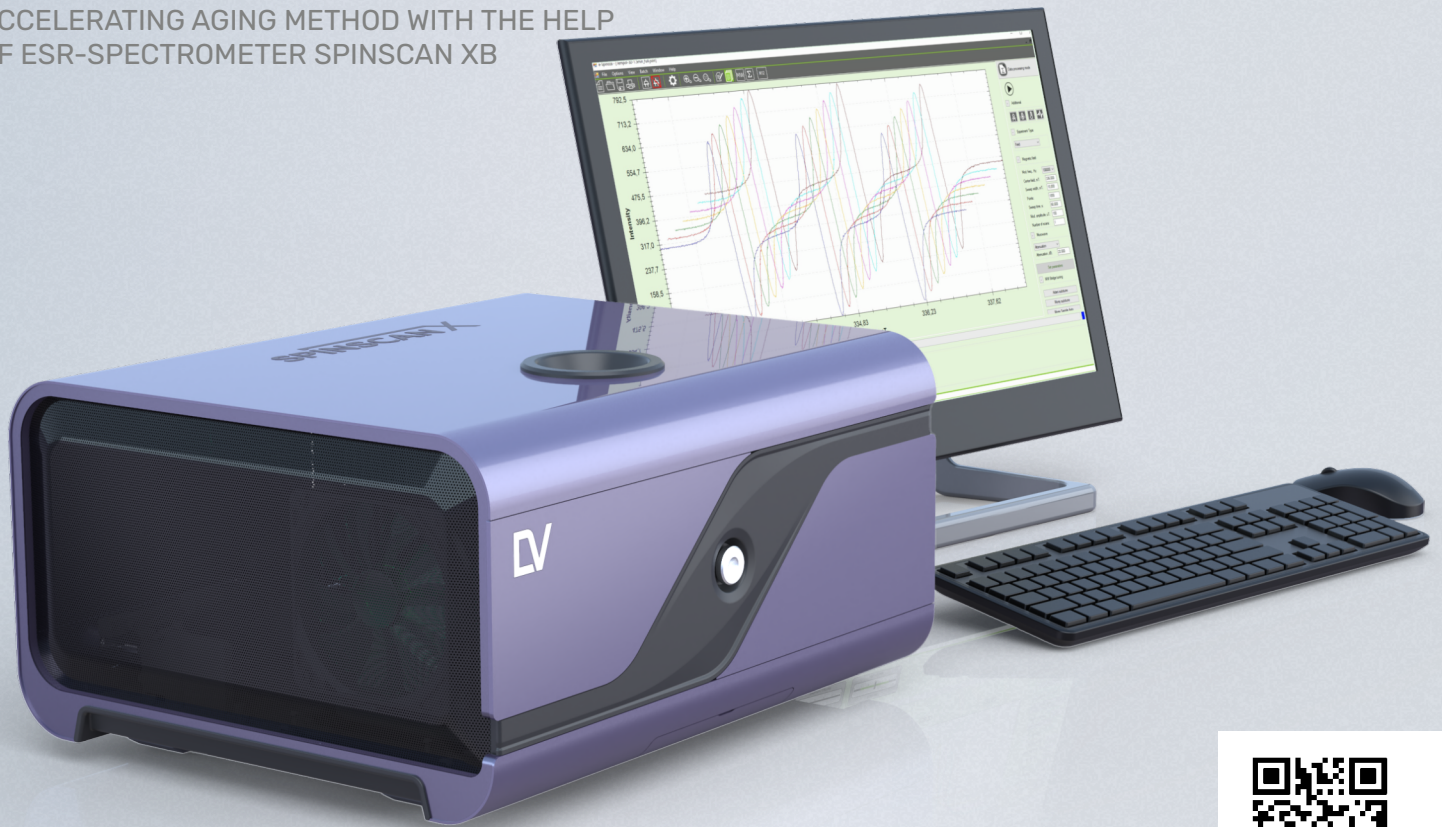




SPINSCAN XB

ESR ANALYZER

SIMPLE FLAVOR STABILITY TEST BY
ACCELERATING AGING METHOD WITH THE HELP
OF ESR-SPECTROMETER SPINSCAN XB



KEY FEATURES

- Detection of radicals initiated via various form of activated oxygen
- Self oxidation control
- Antioxidant effect control
- Fenton reaction - traces of iron, copper and manganese
- Accelerated shelf-life studies

BEER FLAVOR CHANGES OVER TIME PREDICT IT!



IMPROVE SHELF LIFE



INCREASE QUALITY



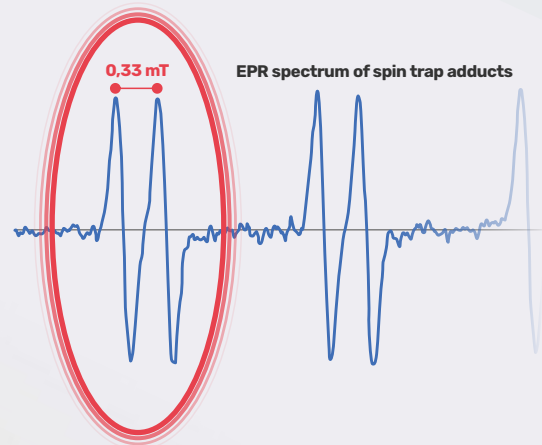
FORECAST "TRUE TO BRAND" TASTE

SPINSCAN XB

- Flavor stability relates to the rate of flavor change through the shelf-life of packaged beer. The fermentation and the influence of yeast are key control points in the production of beer where flavor stability may be altered.
- Experiment with brewing technique and use Paramagnetic Resonance Spectroscopy to predict when beer is getting bad.
- Electron Paramagnetic Resonance Spectroscopy is a unique tool for direct free radicals detection. Accelerated beer aging test with ESR spin-trapping assay method is the easiest way and shorter analysis time to estimate the shelf life of beer.

PACKAGE FOR LAG TIME BEER TEST

- Benchtop ESR Spectrometer SPINSCAN XB
- Thermo Bath with magnetic stirring
- Flow through system (pump, cell, hoses)
- Lab ware
- Spin Trap Kit
- Software package
- Beer Lag Time apps



WHEN GOOD BEER GOES BAD

Malt phenols	Reduction of flavor/aroma, malt astringency
Hop polyphenols	Reduction of flavor/aroma, harsh/astringent
Melanoidins	Natural anti-oxidants - Honey, toffee flavors (2,3-pentanedione) - Cloying notes - Sherry/vinous with high alcohols (Benzaldehyde / Almond) - Needed for oxidation of alcohols
Dark malts	Anti-oxidants, may develop soy sauce, metallic flavors
Fatty acids (Excessive trub)	Soapy/goaty
Hop acids	Valeric (Cheesy, sweaty sock) and butyric (vomit) acids
Hop oils	Grassy, woody
Ribes (Rye-Bees)	Blackcurrent leaves(Fruity) / catty flavor - overripe or spoiled fruit or vegetables
Cidery/sherry	Acetaldehyde(old/rotten apples) and acedic acid (vinegar)

Brian Bergquist / Identifying and Avoiding Oxidation
AHA Homebrew Con 2016 - Baltimore, MD

CUSTOMER SUPPORT

- ON SITE INSTALLATION & COMMISSIONING
- ON SITE OR ONLINE TRAINING
- UNLIMITED TECH SUPPORT

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