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**Concentration-dependent cyanide action revealed by the spectral phasor analysis of UV-excited cellular autofluorescence** NAZAR AL-AAYEDI, MADHU GAIRE, PAUL URAYAMA, Miami University — Spectral phasor analysis on nanosecond-gated UV-excited cellular autofluorescence is being developed for the real-time monitoring of metabolism. Previous studies have shown that emission signals are primarily due to reduced nicotinamide adenine dinucleotide (NADH) forms, significant because NADH is used as a metabolic indicator and biomarker and because the various NADH forms respond differently to changes in mitochondrial function. Here we apply the monitoring technique to investigate the autofluorescence response of cellular suspensions to additions of cyanide, an inhibitor of cellular respiration. Using spectral phasor analysis to assess whether observed spectral changes are consistent with a two-state model, we find evidence for the spectral detection of a concentration-dependent cyanide action. Results suggest quantification of spectrum shape can be useful in the real-time, non-invasive detection of small differences between cellular metabolic responses.

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