Imaging of Fluorescently labeled Olive Polyphenol Hydroxytyrosol in Caco-2 Cells

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Hydroxytyrosol, one of the major polyphenols present in olive leaf and oil, is known to possess a high antioxidant and anticancer capacity. But, the uptake and localization of hydroxytyrosol in cancer cells is unknown.

The aim of this study was to analyze the localization of hydroxytyrosol conjugated to fluorescein isothiocyanate (FITC) in colorectal cancer cells (Caco-2).

Hydroxytyrosol was conjugated with FITC via the alcoholic hydroxyl group, as confirmed by NMR analysis (Figure 1a). Caco-2 cells were cultured on glass bottom dishes, and then incubated with 125 µM FITC conjugated hydroxytyrosol for 24 hours and subsequently labelled with LysoTracker Red (Lysosome marker) and Hoechst 33342 (Nuclei marker) before imaging on the Olympus FV1200 Laser confocal microscope. As a result, FITC hydroxytyrosol was detected in the lysosome but not in the nuclei of Caco-2 (Figure 1b).

In this presentation, we will report that cellular imaging using fluorescent labeled food compounds is a powerful tool to evaluate the effect of functional food constituents (1) (2).

**Figure 1**
(a) Chemical formula of FITC-labelled hydroxytyrosol
(b) Confocal microscopic data set of Caco-2 cells in vitro that were exposed to fluorescent-labeled hydroxytyrosol (FITC-HT), lysotacker (Lysosome), and Hoechst 33342 (Nucleus).

**REFERENCES**