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DETECTING THE ESSENTIALS OF FOOD – SUPER-HYPHENATIONS AND NANOGIT$^{+ACTIVE}$

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The beneficial effects of plant-rich diets are increasingly recognized in the treatment of civilization diseases due to the abundance and diversity of bioactive substances therein. However, the important active portion of natural food is presently not under control. Hence, a paradigm shift from quality control based on marker compounds to effect-profiles is postulated. A generic strategy was developed to evaluate the bioactivity profile of each food as complete as possible, and without overlooking, straightforwardly assign the most potent bioactive compounds [1, 2]. This biological-physico-chemical hyphenation is able to straightforwardly detect and control the essentials of food [3].

Sample components can not only be changed but also activated or inactivated via enzymatic or metabolic reactions. Identifying such activity conversions is the challenge. The newly developed all-in-one nanoGIT$^{+active}$ system substantially extends, and at the same time, miniaturizes the state-of-the-art technology [4]. It combines all relevant steps on the same adsorbent surface. On-surface metabolization, immediate separation, multi-imaging, and effect-directed detection is performed as all-in-one system. The conversions on surface were verified by comparison with state-of-the-art *in vitro* assays.

[1] T. Schreiner, G.E. Morlock, J. Chromatogr. A 1647 (2021) 462154.
[2] T. Schreiner, J. Heil, D. Sauter, M. Friz, G.E. Morlock (2021) in submission.
[3] G.E. Morlock, Anal. Chim. Acta (2021) 338644, in print.
[4] G.E. Morlock, L. Drotleff, S. Brinkmann, Anal. Chim. Acta 1154 (2021) 338307.

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