

In vinum veritas: estrogen-effective compounds discovered in wine by HPTLC-pYES

Highlights

- ✓ Discovery of estrogen-effective compounds performed by combination of HPTLC with the planar Yeast Estrogen Screen (pYES)
- ✓ Liquid-liquid extraction carried out for 30 white, rosé and red wines
- ✓ At one go, 15 wines analyzed in parallel after minimal sample preparation
- ✓ Biodensitometry for quantification of the blue fluorescent 4-methylumbelliferone formed, indicating the estrogen-effective compound
- ✓ Seven unknown estrogen-effective compounds (Fig. 1 a – g) were found in wines by this direct bioautography method
- ✓ Being not phytoestrogens such as apigenin, genistein, kaempferol or naringenin (Figs. 2 and 3)
- ✓ Extensive screening and bioprofiling of wines without prior selection of the target analytes
- ✓ Despite this gain in knowledge - Cheers!

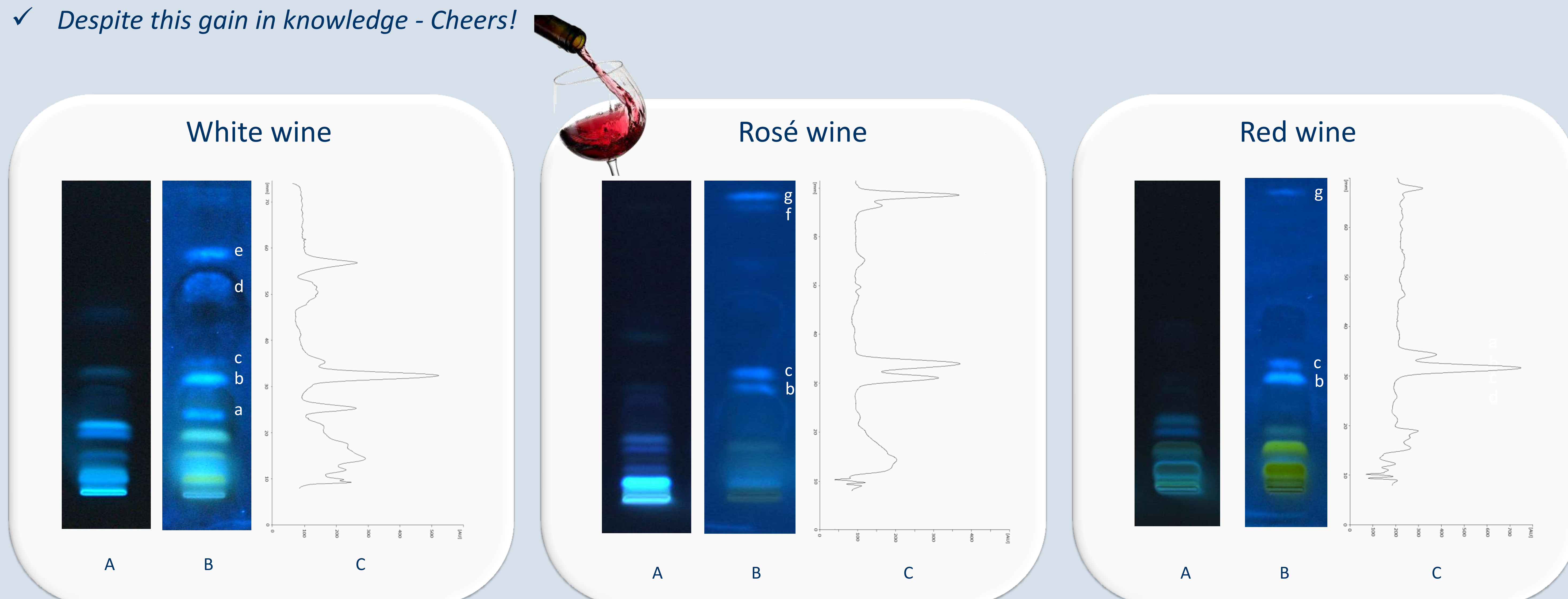


Fig. 1 HPTLC-pYES of different types of wine: (A) HPTLC chromatogram at UV 366 nm after development on HPTLC plates RP 18 W with *n*-hexane - ethyl acetate, (B) HPTLC bioautogram at UV 366 nm after the pYES bioassay (*Saccharomyces cerevisiae* cells carry the human estrogen receptor hER α) and (C) Biodensitometry via fluorescence measurement at 366/>400 nm

Overspotting with phytoestrogens

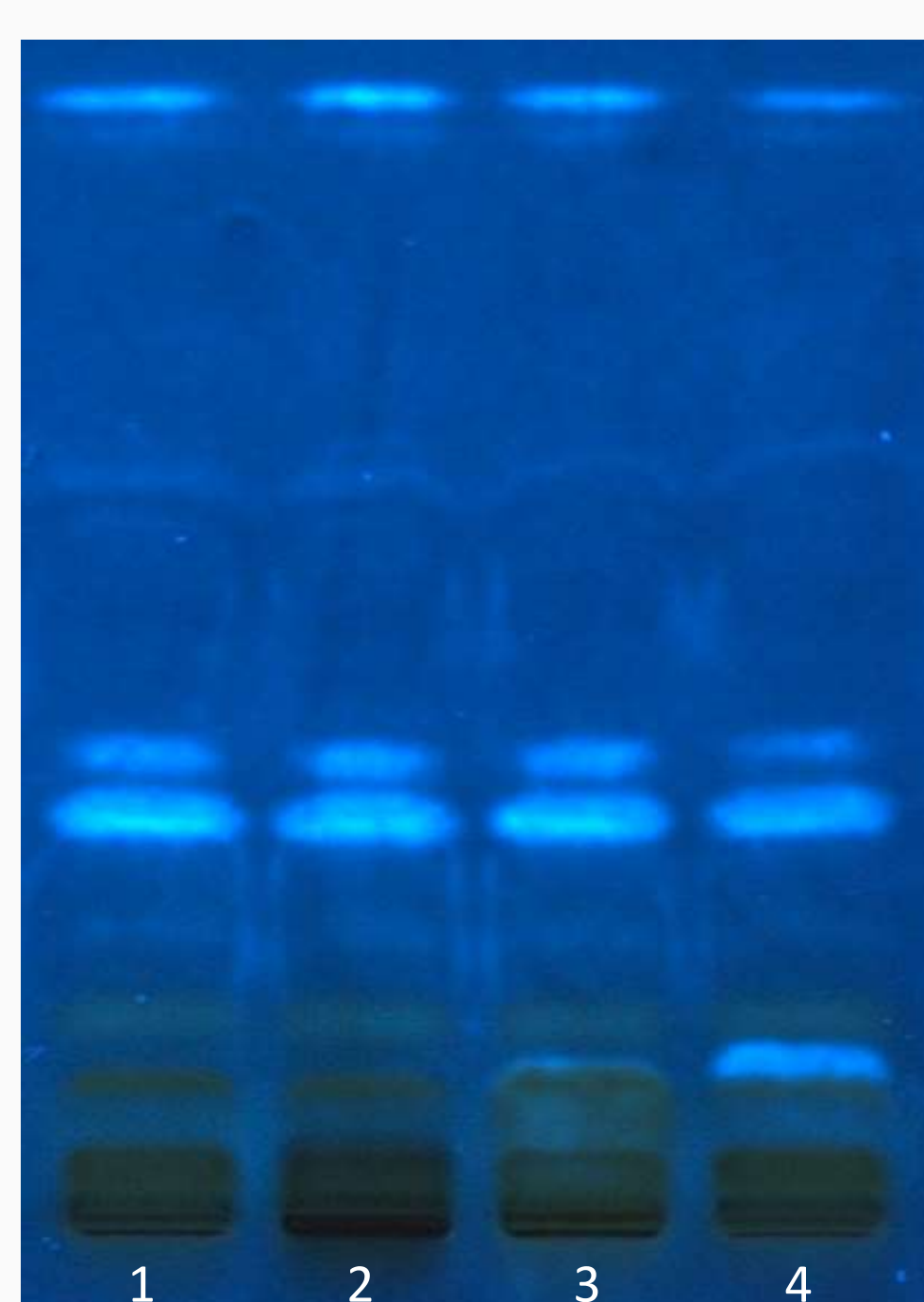


Fig. 2 Red wine (track 1) oversprayed with different standard substances, *i. e.* on track:
2: apigenin
3: kaempferol
4: naringenin

hR_F comparison with phytoestrogens

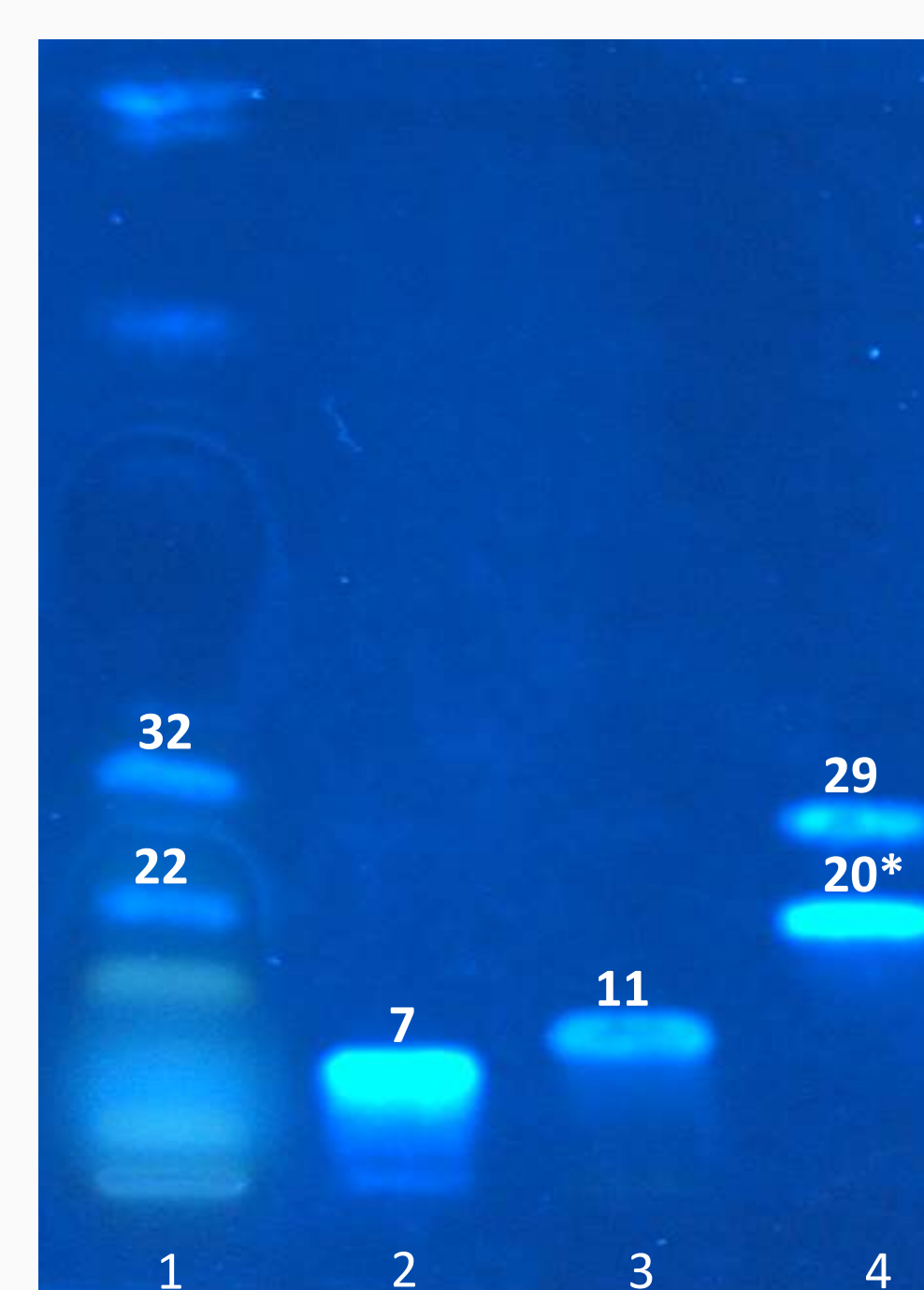


Fig. 3 Comparison of white wine (track 1) with hR_F values of known phytoestrogens, *i. e.* on track
2: genistein
3: naringenin
4: fenhexamid and fludioxonil (marked*)

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