

Innovative and thorough practice to certify reference materials for sensory defects of olive oil

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SUPPLEMENTARY MATERIAL

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Table SM1. Description of the starting materials used in the production of the olive oil batches candidates to reference materials (*Note that ATF, MOH, PIC, RNC and VWA are the encoded names and they are not related to the material composition*).

Material code	Blend of olive oils	Description
ATF/2	6.0% concentrate #1 94.0% base #1	Freshly harvested olive fruits of 'picual' botanical variety were subjected to a fermentation process, stacking the fruits on the earthy soil to generate the fusty/muddy defect. Then the olives are milled and a fusty/muddy defective olive oil is produced (concentrate #1). This was blended with EVOO from ripe olive fruits of the 'picual' variety (base #1).
ATF/1	1.6% concentrate #1 98.4% base #1	Olive oil similar to the ATF/2 material, but resulting from a higher dilution of concentrate #1 into base #1.
MOH/2	2.0% concentrate #2 98.0% base #1	Freshly harvested olive fruits of botanical 'picual' variety were stored in a humid environment for long enough to generate the musty defect. Then the olives are milled and a musty defective olive oil is produced (concentrate #2). This was blended with EVOO from ripe olive fruits of the 'picual' variety (base #1).
MOH/1	0.45% concentrate #2 99.55% base #1	Olive oil similar to the MOH/2, but resulting from a higher dilution of concentrate #2 into base #1.
PIC/1	100% base #1	EVOO from ripe olive fruits of the 'picual' botanical variety (base #1).
RNC/2	20.0% concentrate #3 80.0% base #2	EVOO from olive fruits of 'arbequina' botanical variety (base #2), packed in glass containers, were left outdoors in a sunny area in order to develop an oxidative degradation process to generate the rancid defect (concentrate #3). This was blended with original non-degraded EVOO (base #2).
RNC/1	5.0% concentrate #3 95.0% base #2	Olive oil similar to the RNC/2, but resulting from a higher dilution of concentrate #3 into base #2.
VWA/1	100% concentrate #4	VOO from olive fruits of 'picual' botanical variety with wine/vinegary defect, provided by PDO 'Sierra de Segura' (concentrate #4). No further information about the production process of the defect in question is available.

Figure SM1. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as ATF/1 (low intensity of fusty/muddy defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

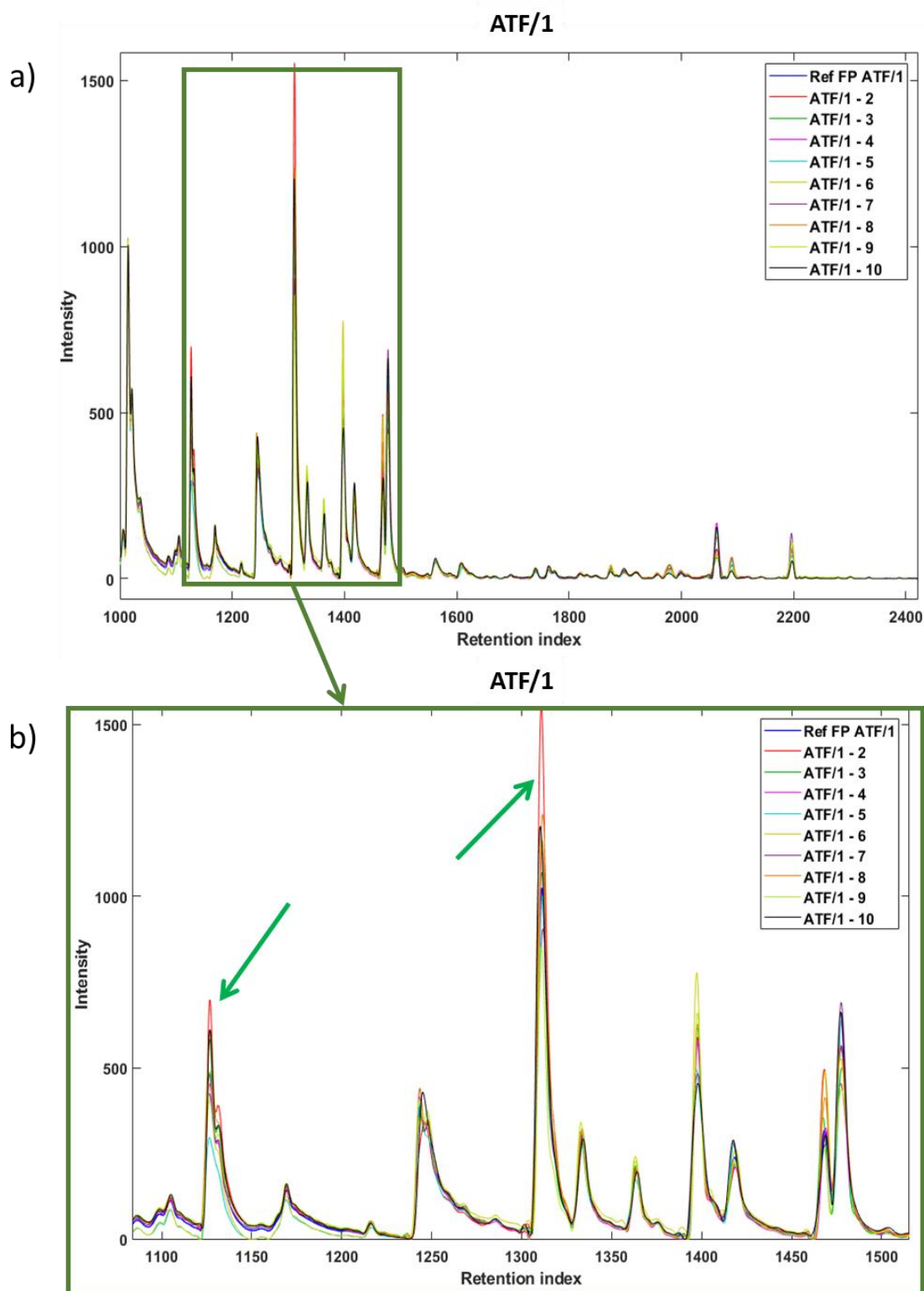


Figure SM2. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as ATF/2 (medium intensity of fusty/muddy defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

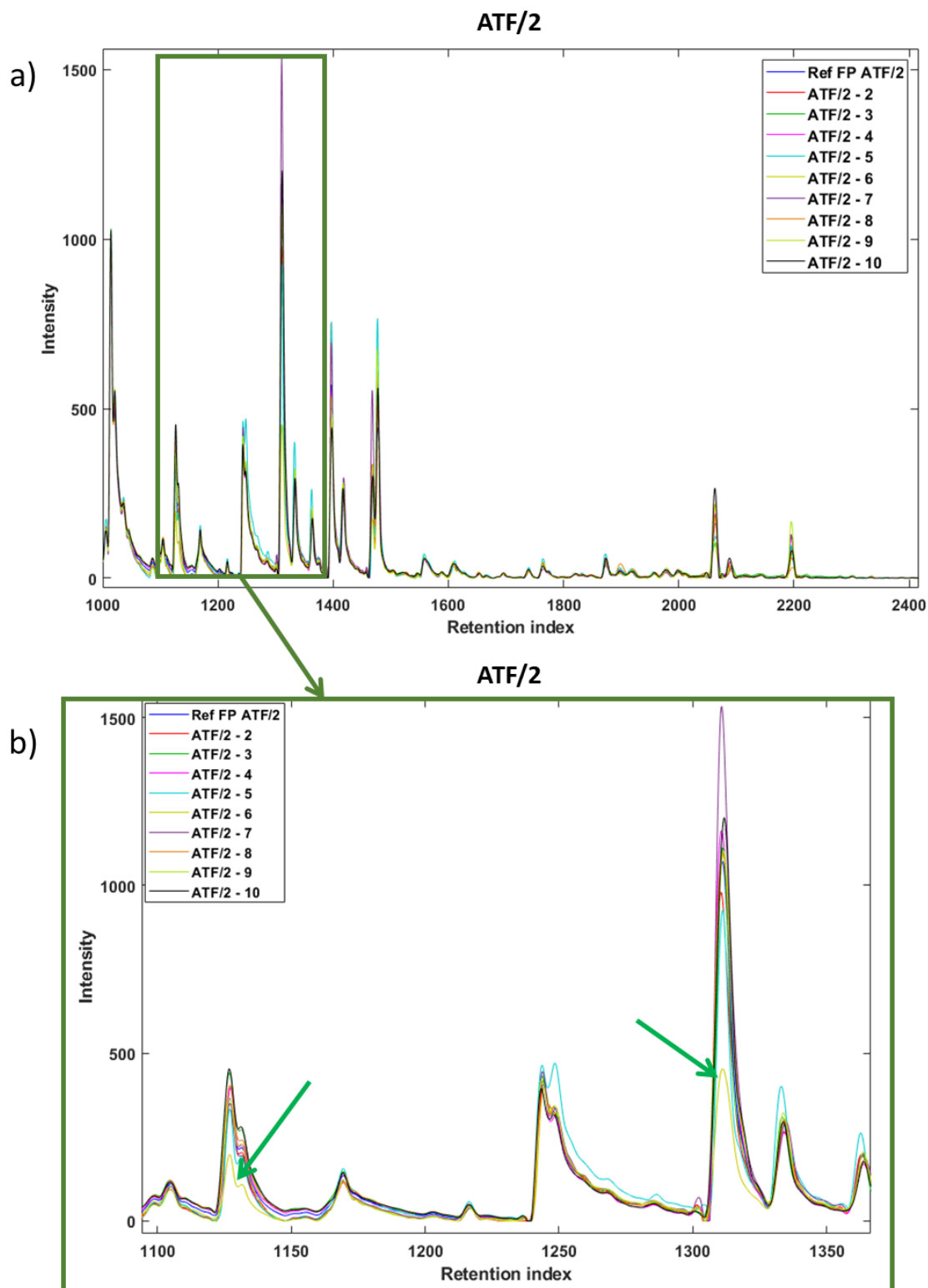


Figure SM3. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as MOH/1 (low intensity of musty defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

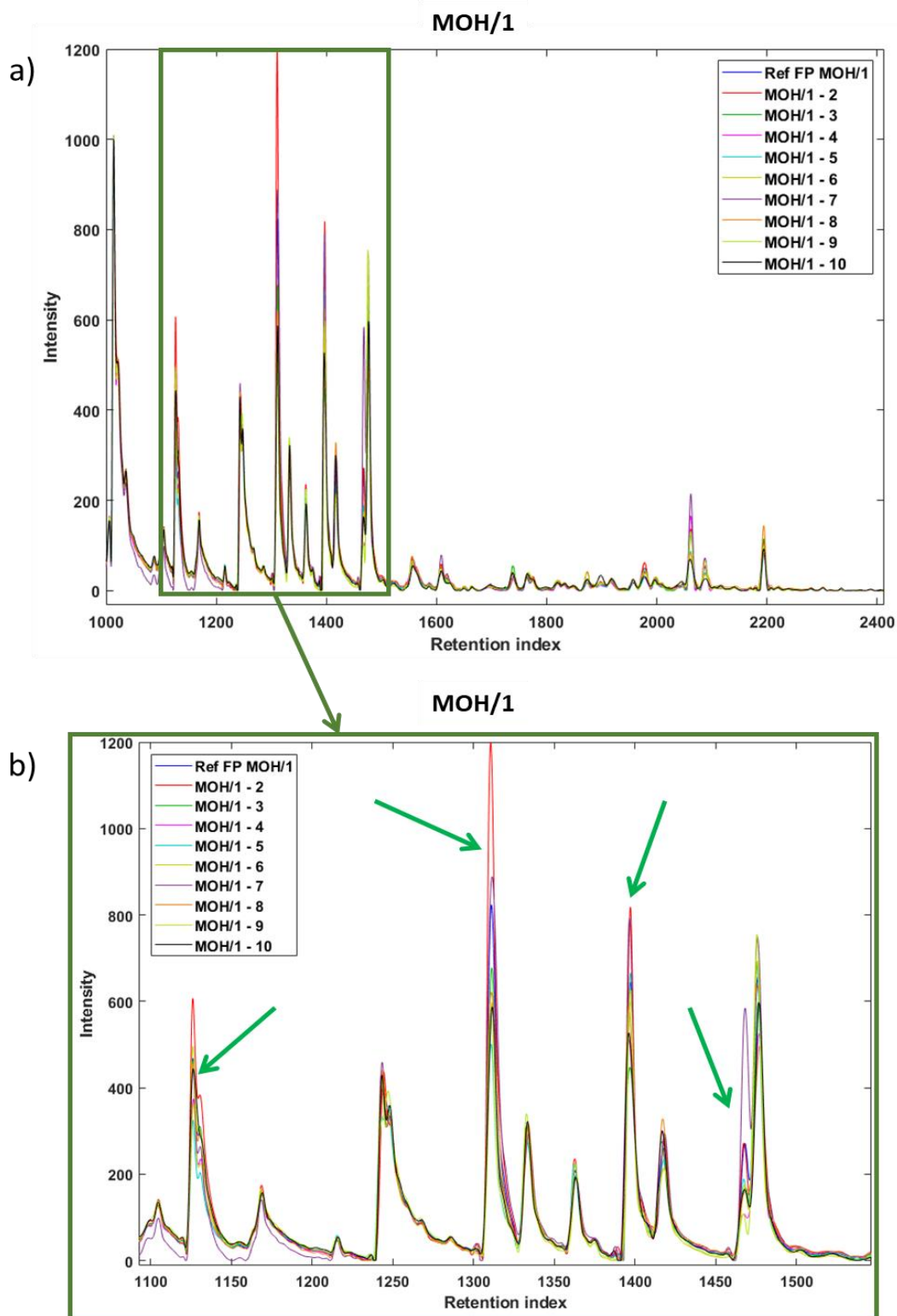


Figure SM4. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as MOH/2 (medium intensity of musty defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

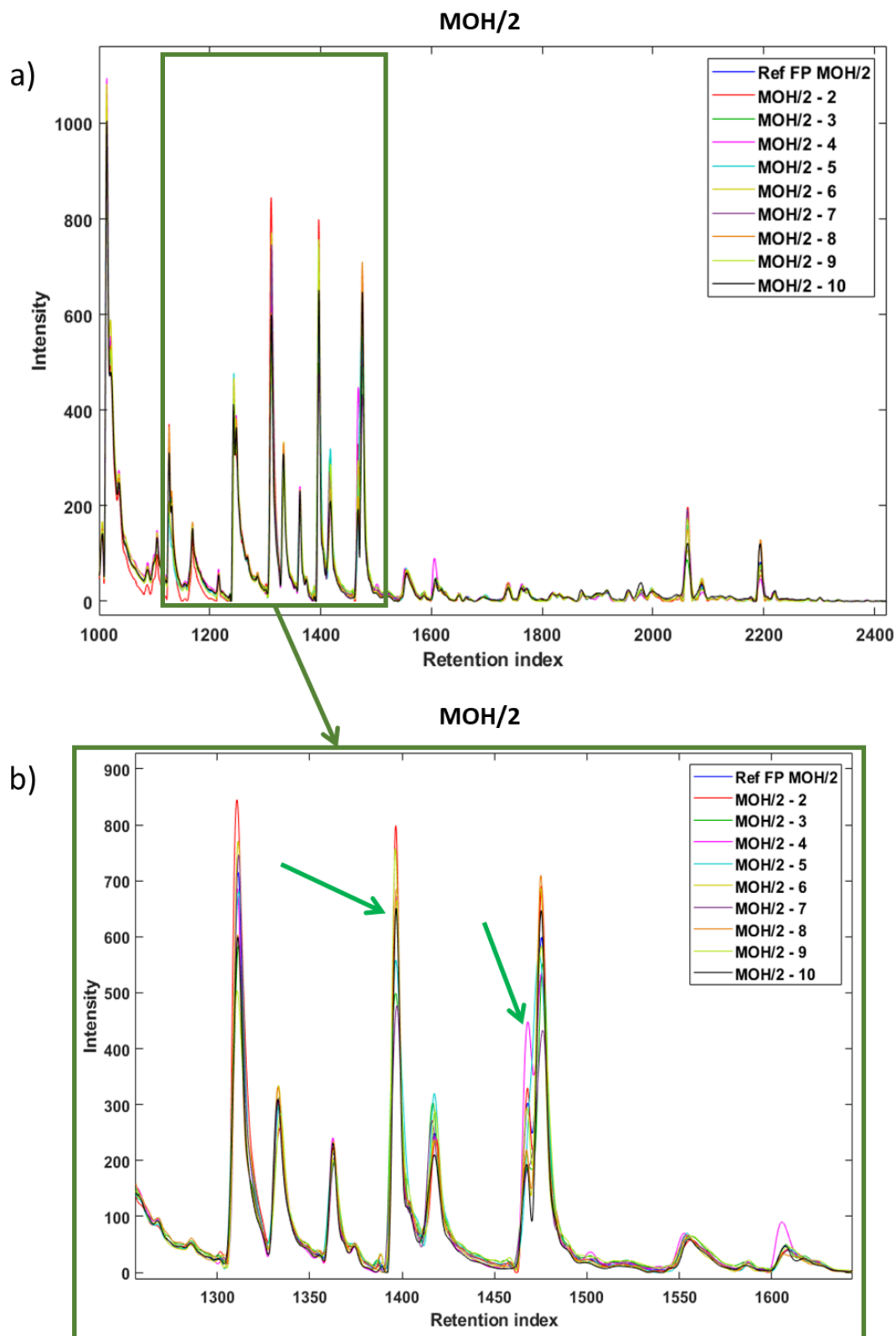


Figure SM5. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as PIC/1 (fruity attribute) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

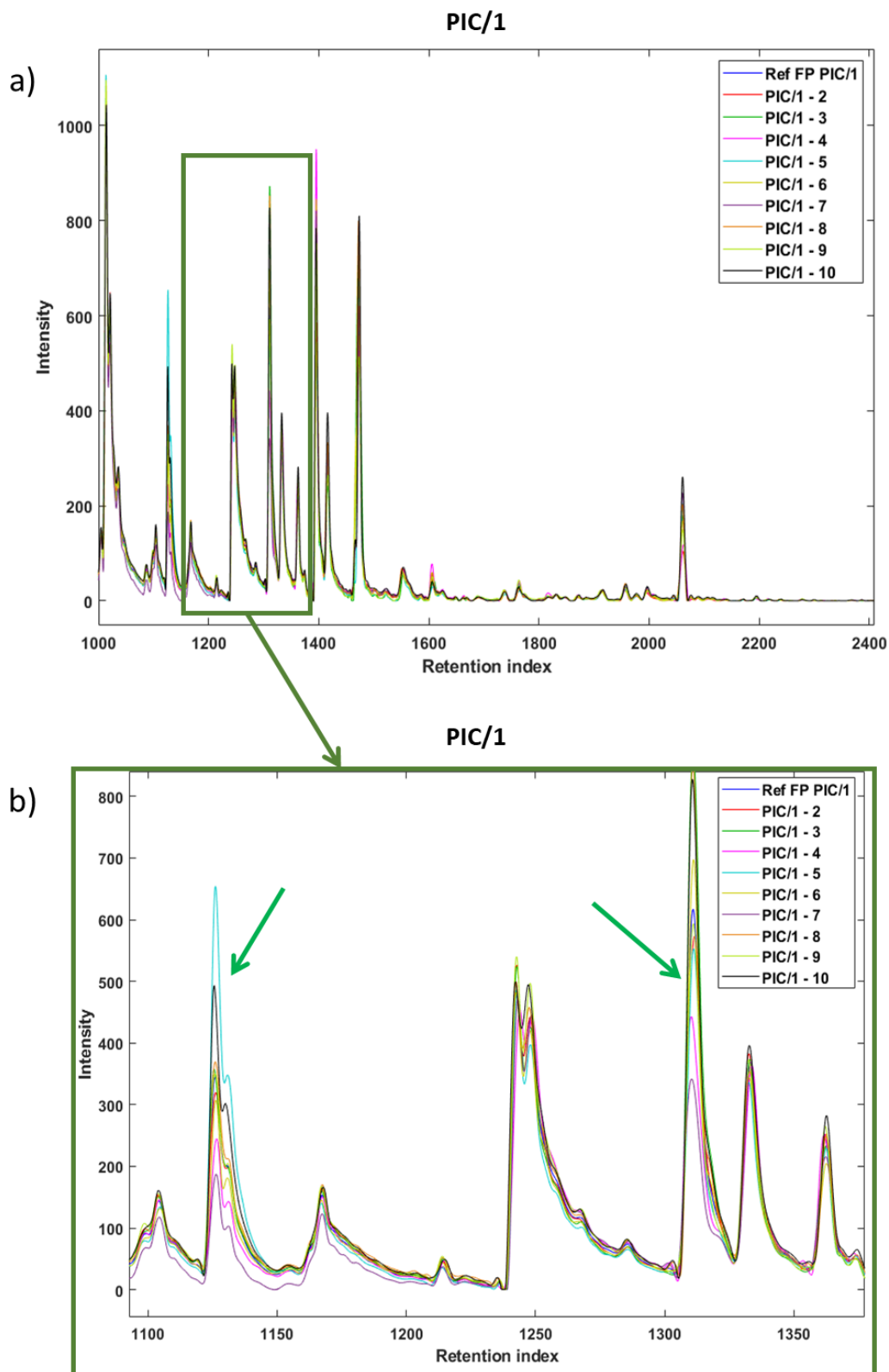


Figure SM6. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as VWA/1 (wine/vinegary defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

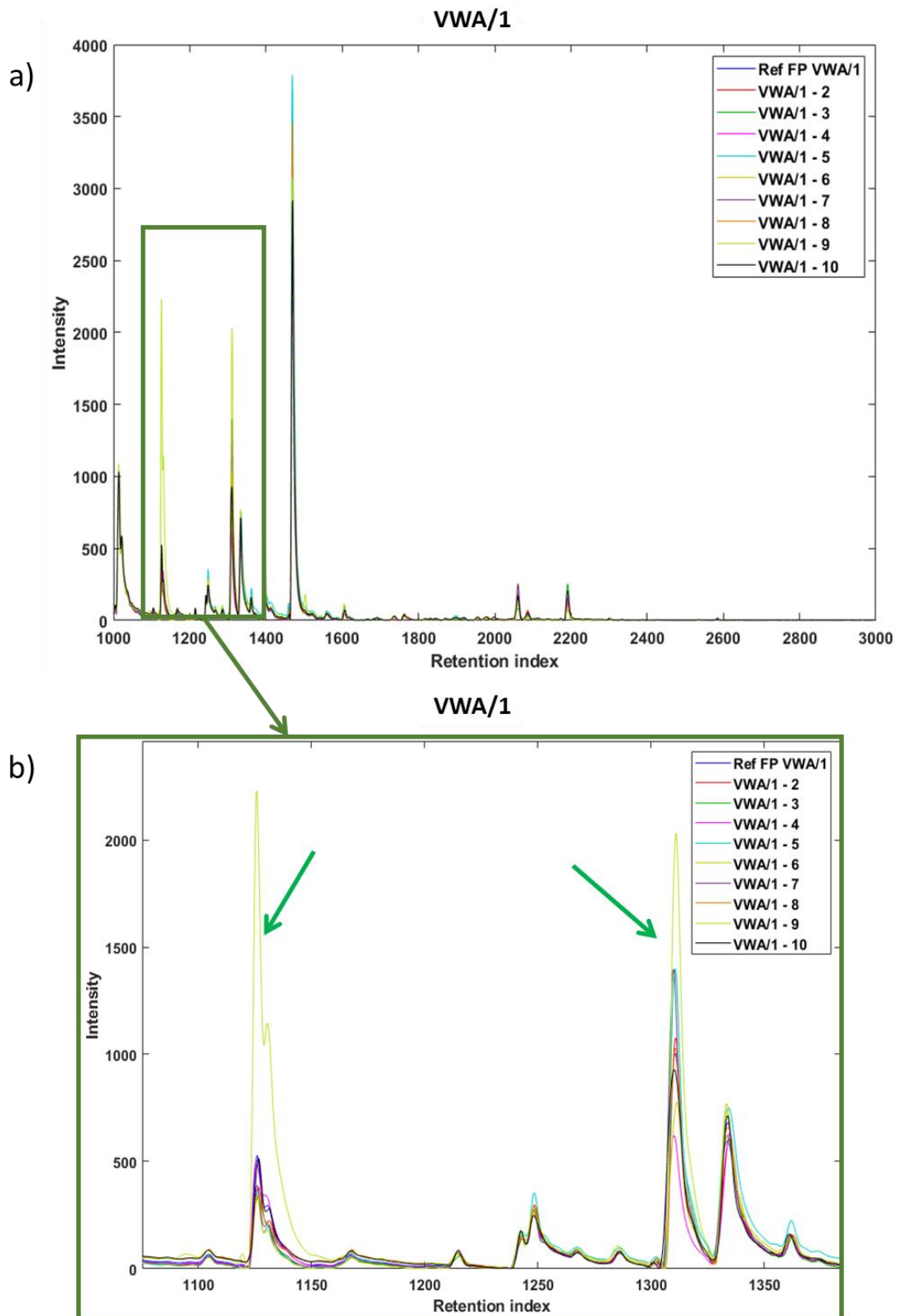


Figure SM7. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as RNC/1 (low intensity of rancid defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

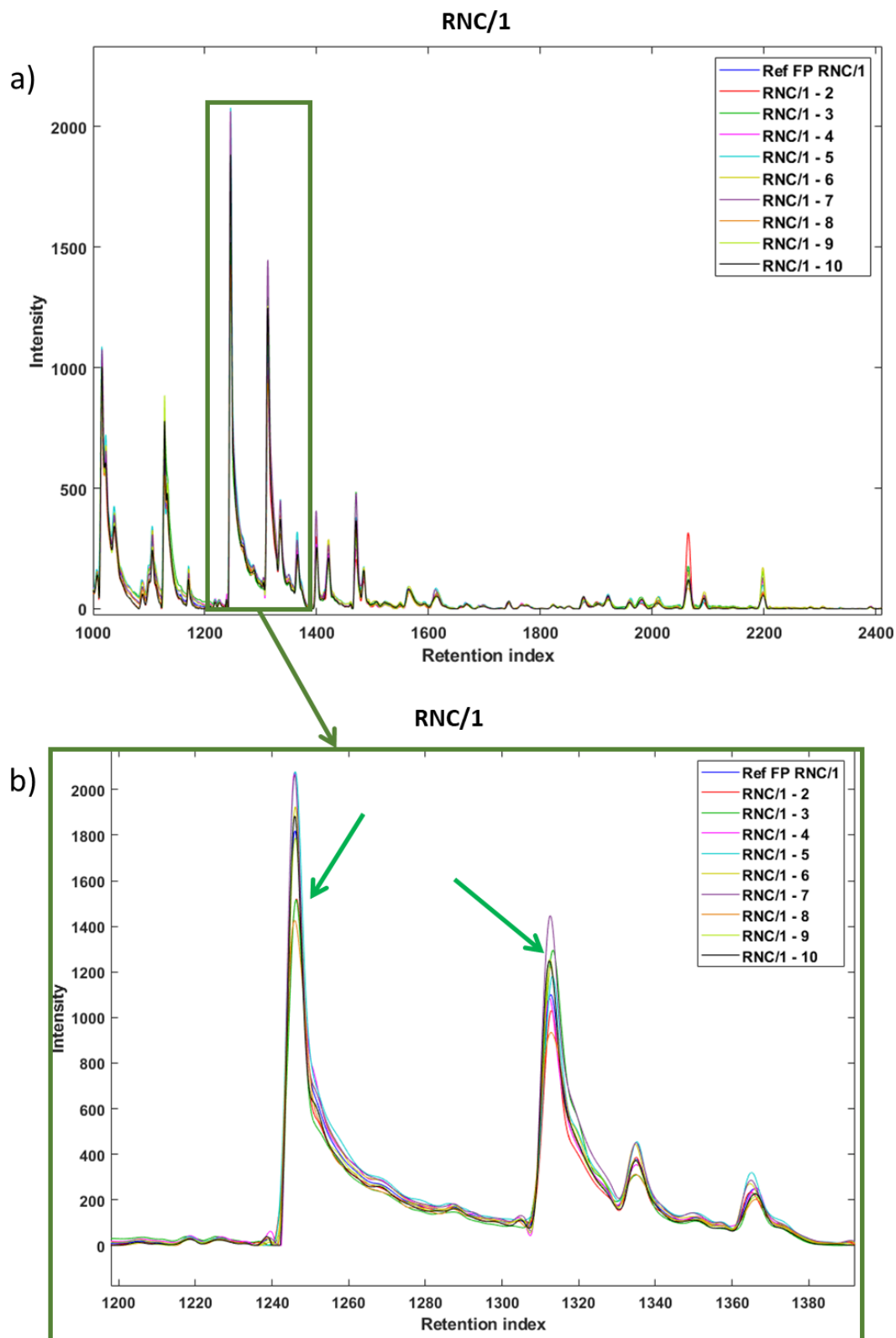


Figure SM8. a) Agnostized chromatographic fingerprints (reference and individual units) of the RM candidate encoded as RNC/2 (medium intensity of rancid defect) used to obtain the similarity indices in the homogeneity study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows).

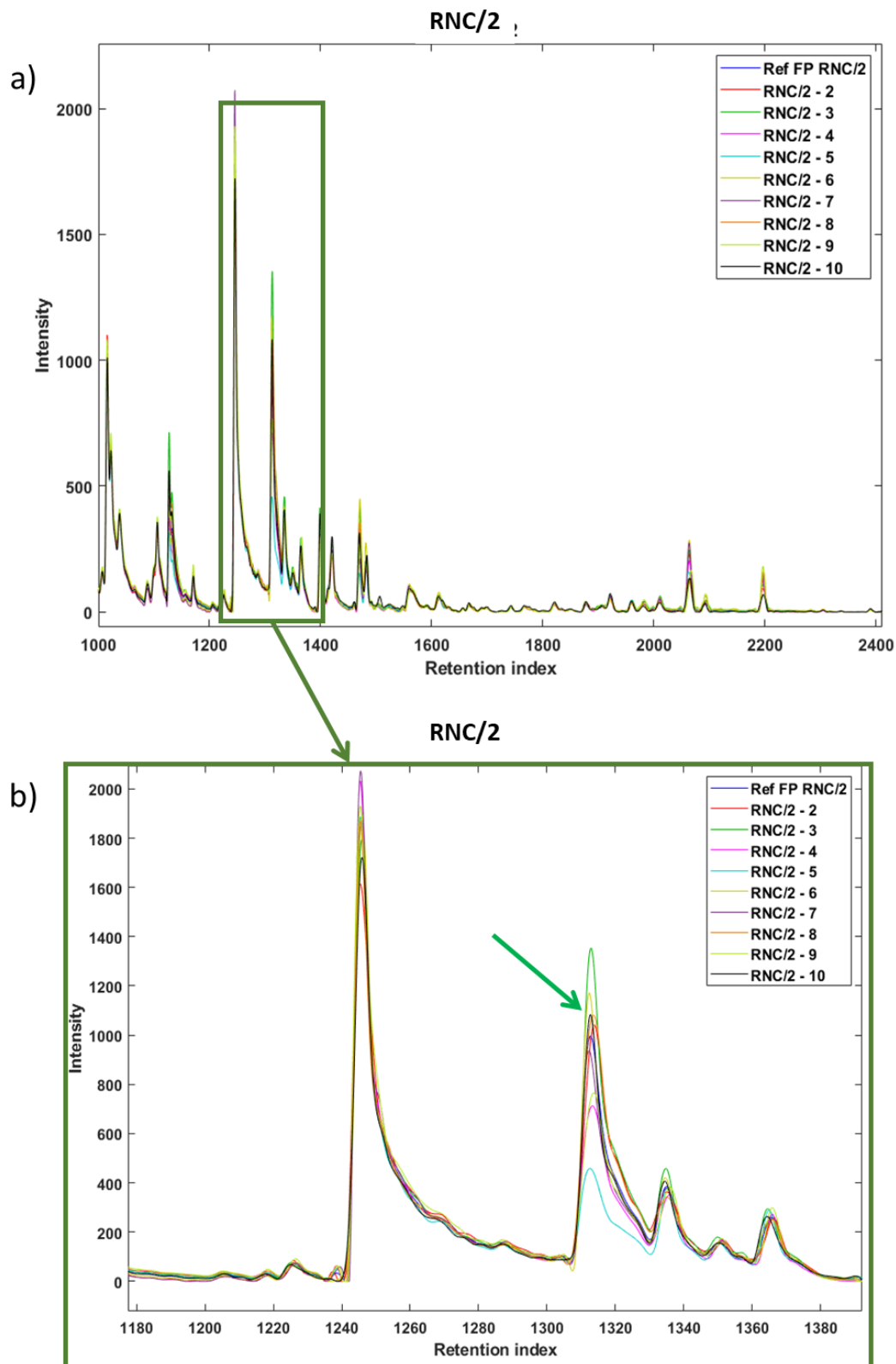


Figure SM9. a) Agnostized chromatographic fingerprints of the RM candidate encoded as ATF/1 (low intensity of fusty/muddy defect) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

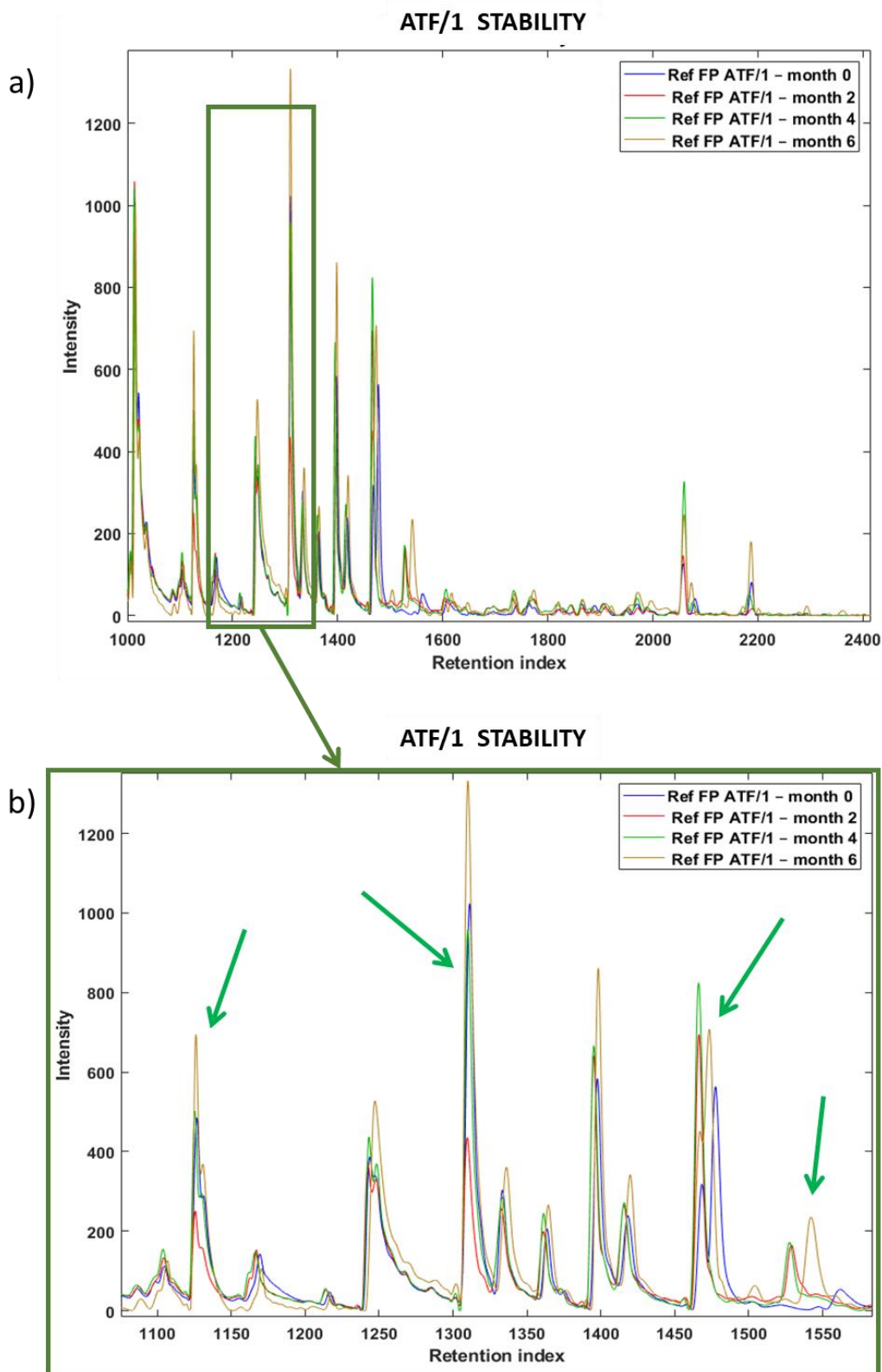


Figure SM10. a) Agnostized chromatographic fingerprints of the RM candidate encoded as ATF/2 (medium intensity of fusty/muddy defect) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

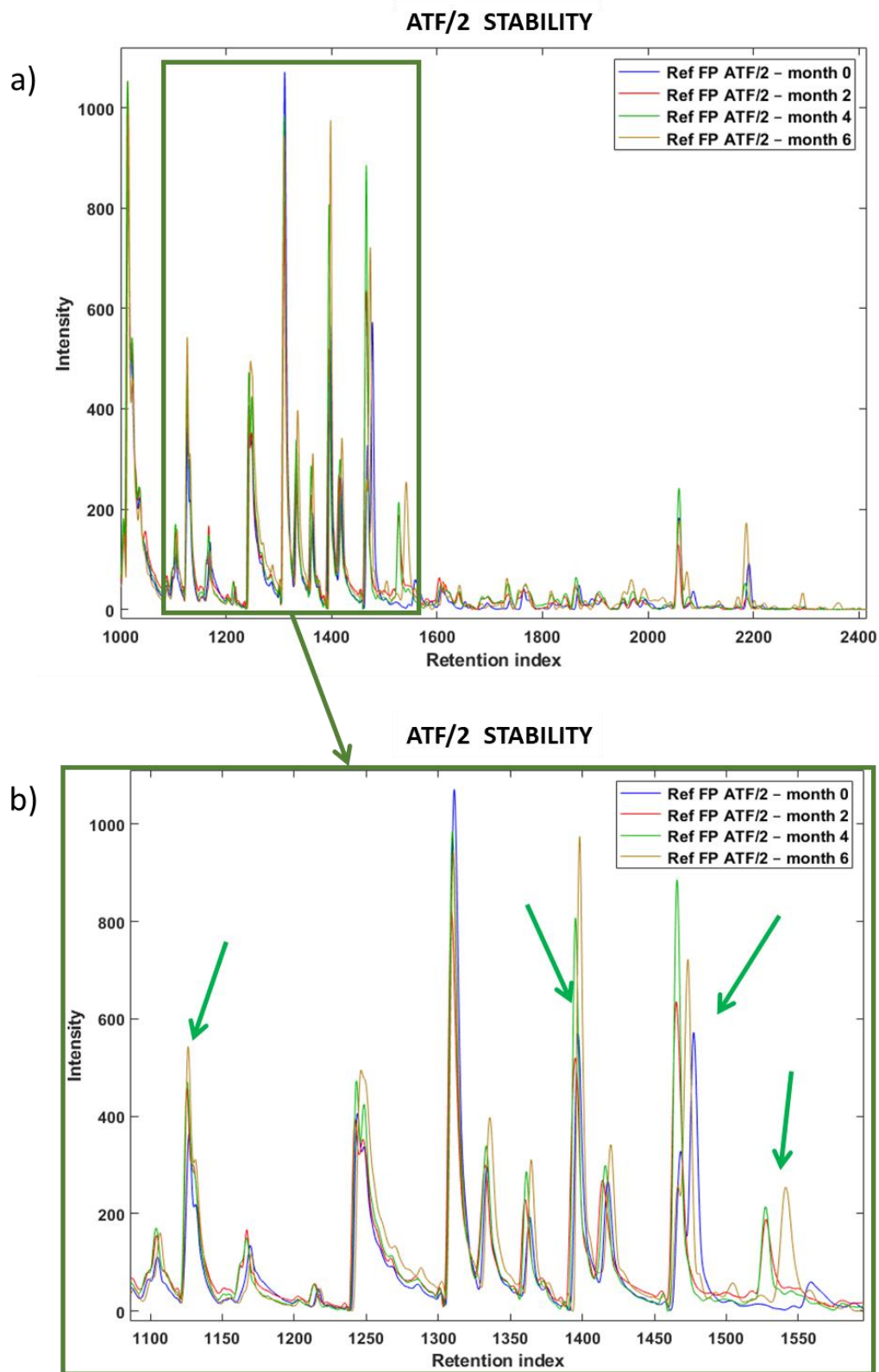


Figure SM11. a) Agnostized chromatographic fingerprints of the RM candidate encoded as MOH/1 (low intensity of musty defect) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

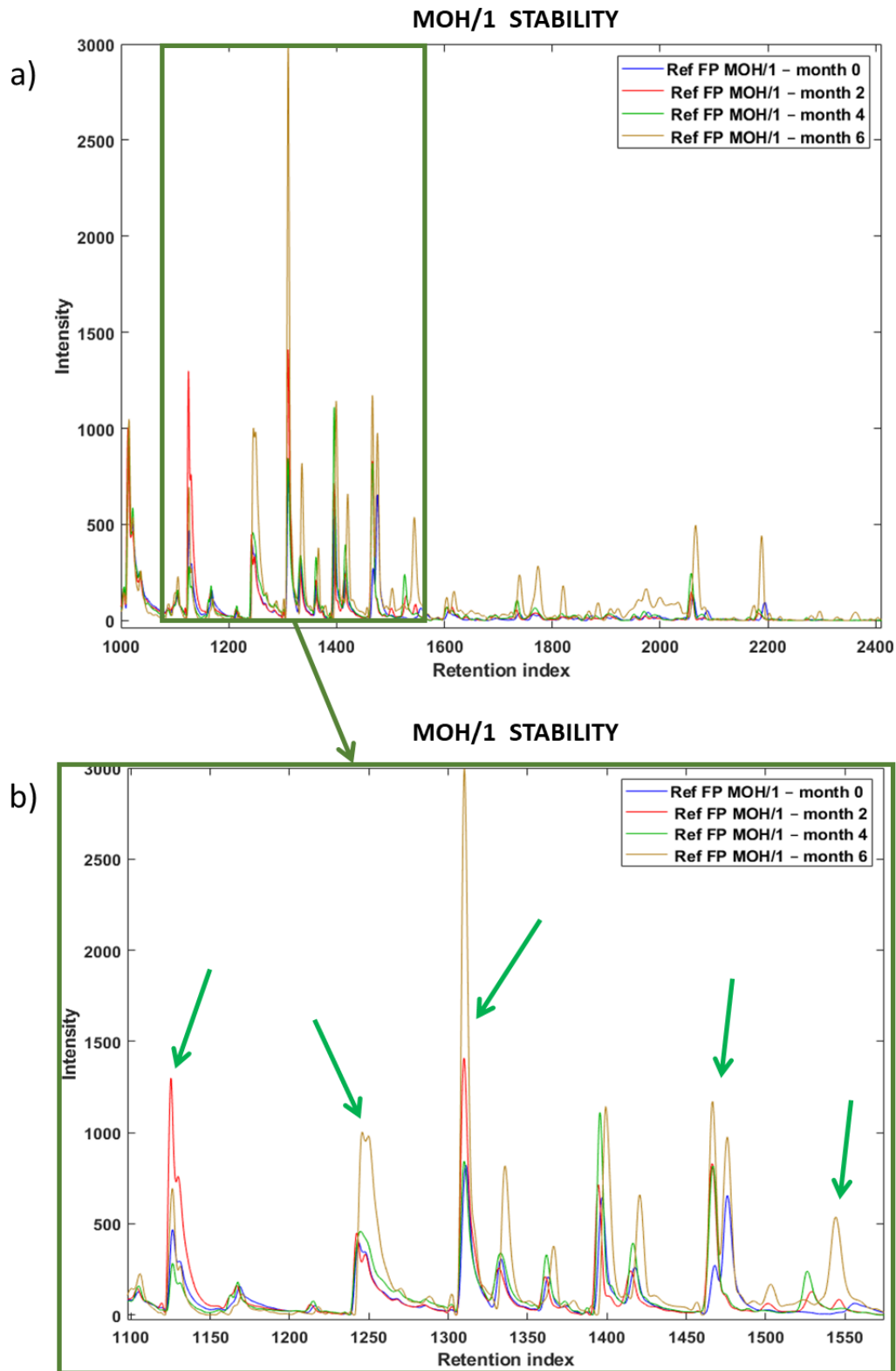


Figure SM12. a) Agnostized chromatographic fingerprints of the RM candidate encoded as MOH/2 (medium intensity of musty defect) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

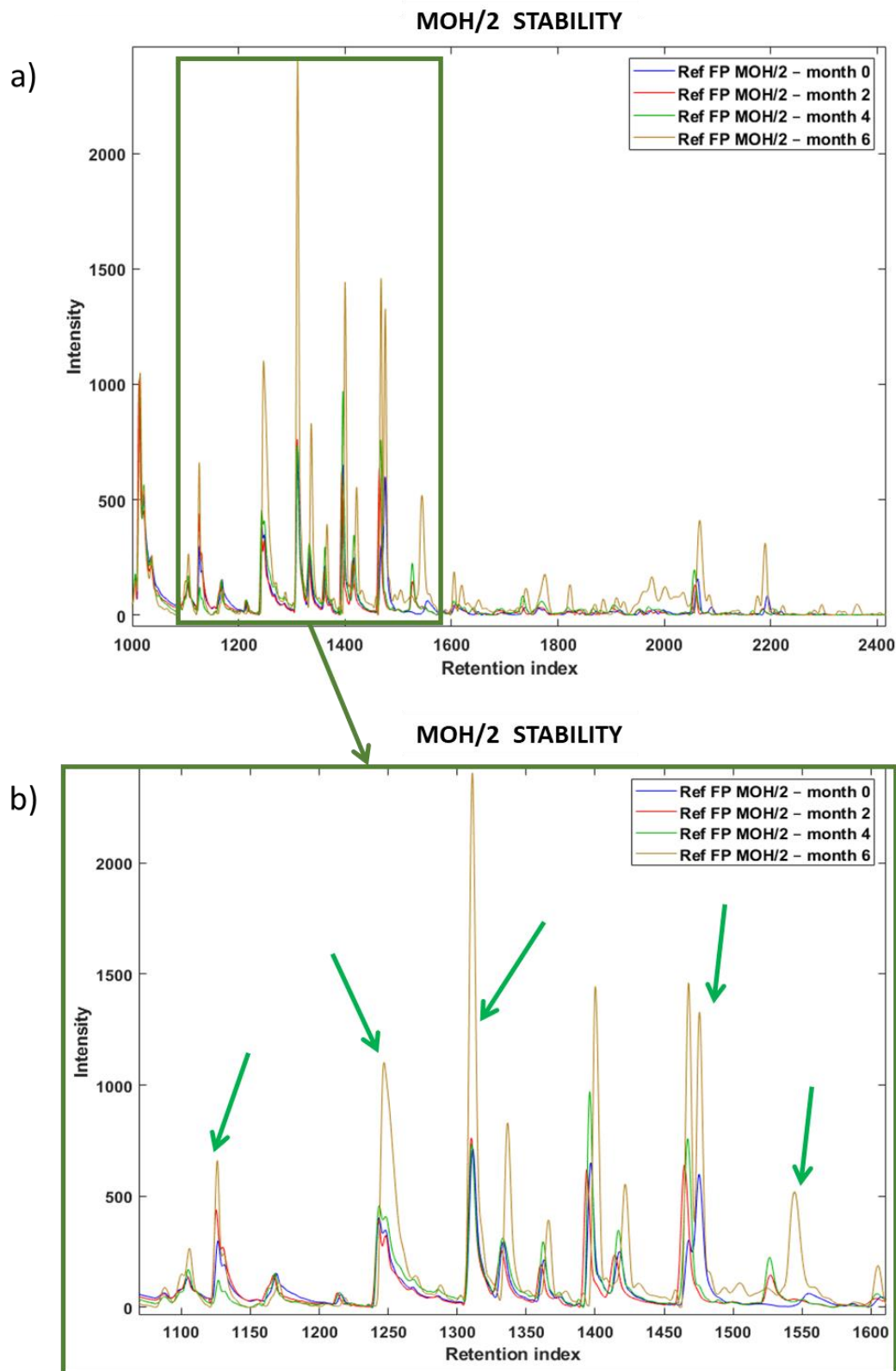


Figure SM13. a) Agnostized chromatographic fingerprints of the RM candidate encoded as PIC/1 (fruity attribute) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

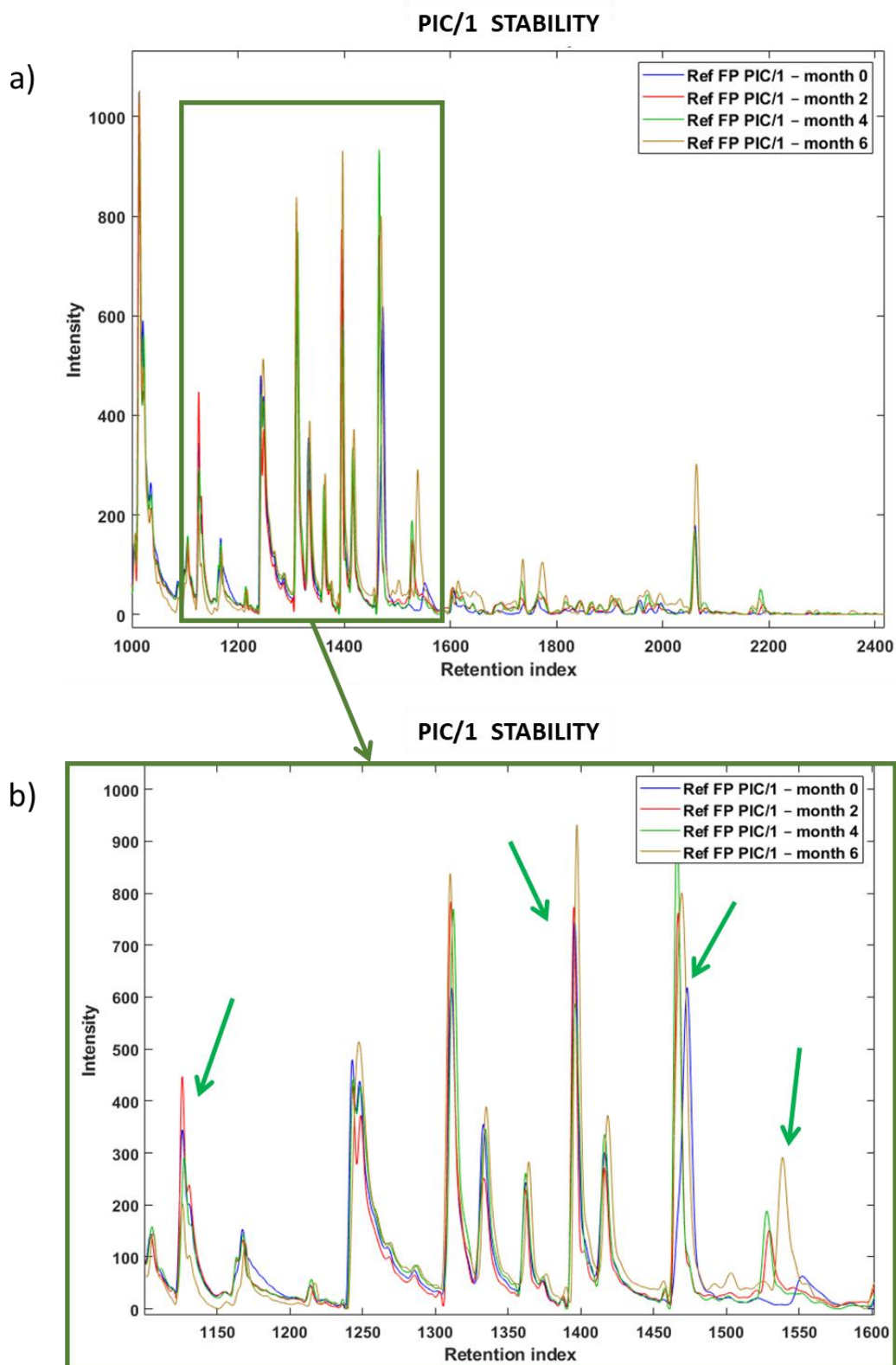


Figure SM14. a) Agnostized chromatographic fingerprints of the RM candidate encoded as VWA/1 (wine/vinegary defect) used to obtain the similarity indices in the stability study. b) Zoomed the region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

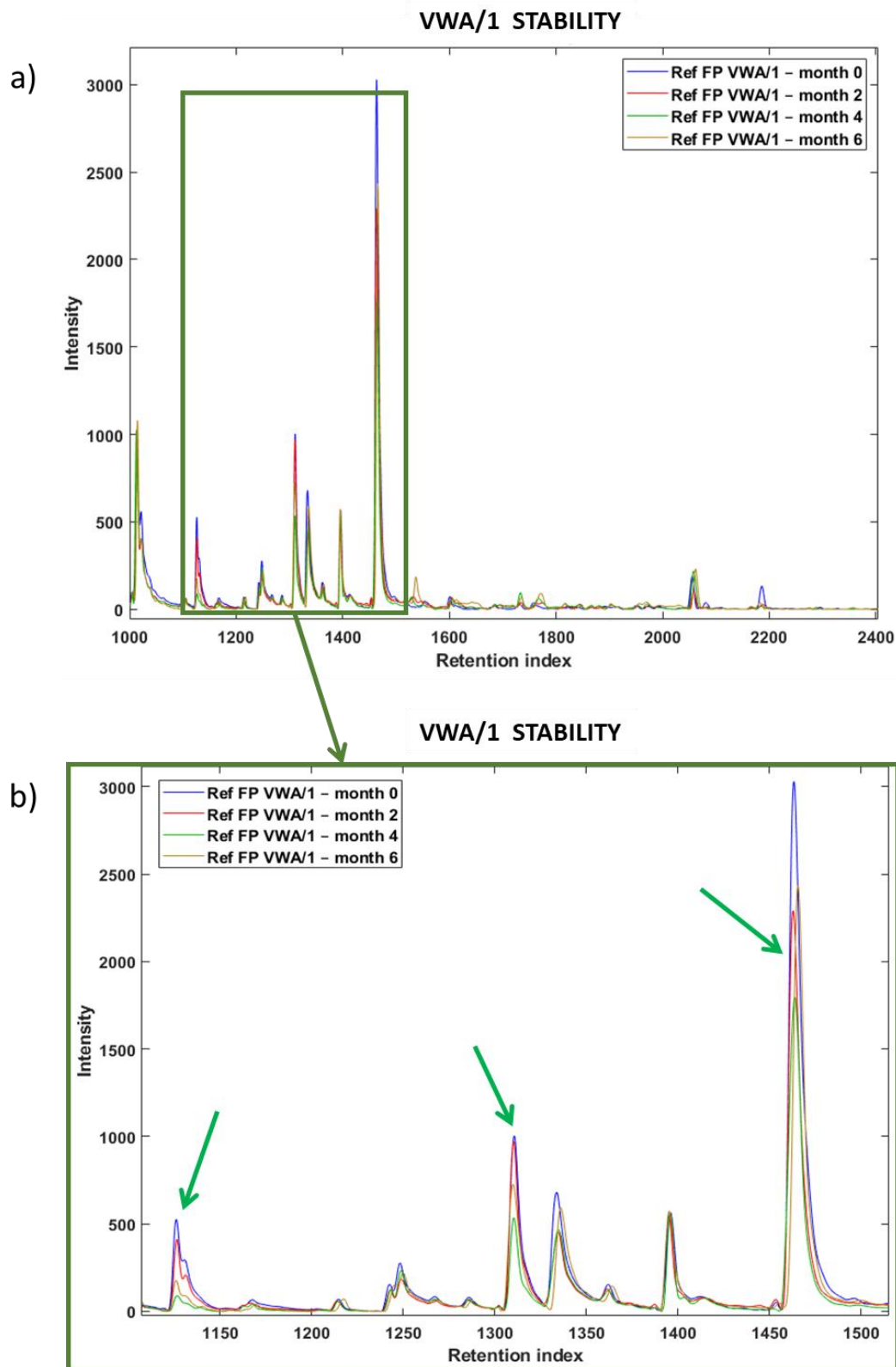


Figure SM15. a) Agnostized chromatographic fingerprints of the RM candidate encoded as RNC/1 (low intensity of rancid defect) used to obtain the similarity indices in the stability study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

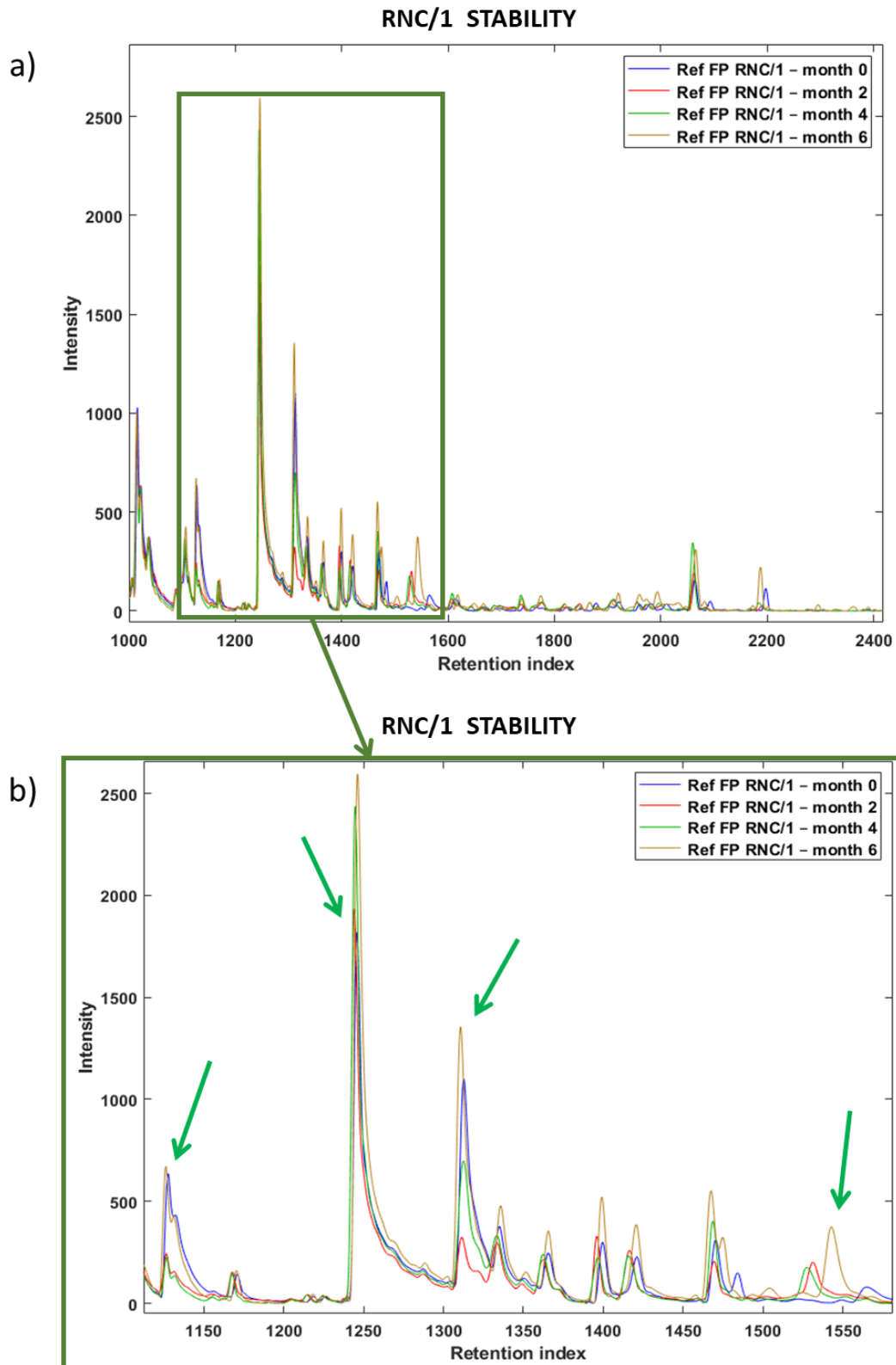


Figure SM16. a) Agnostized chromatographic fingerprints of the RM candidate encoded as RNC/2 (medium intensity of rancid defect) used to obtain the similarity indices in the stability study. b) Zoomed region where the larger differences appear in the agnostized chromatographic fingerprints (variables highlighted with green arrows) during the different months.

