

**Table S1.** Chemical and technological parameters of M2 flour. Results are expressed as mean  $\pm$  SD (n = 4)

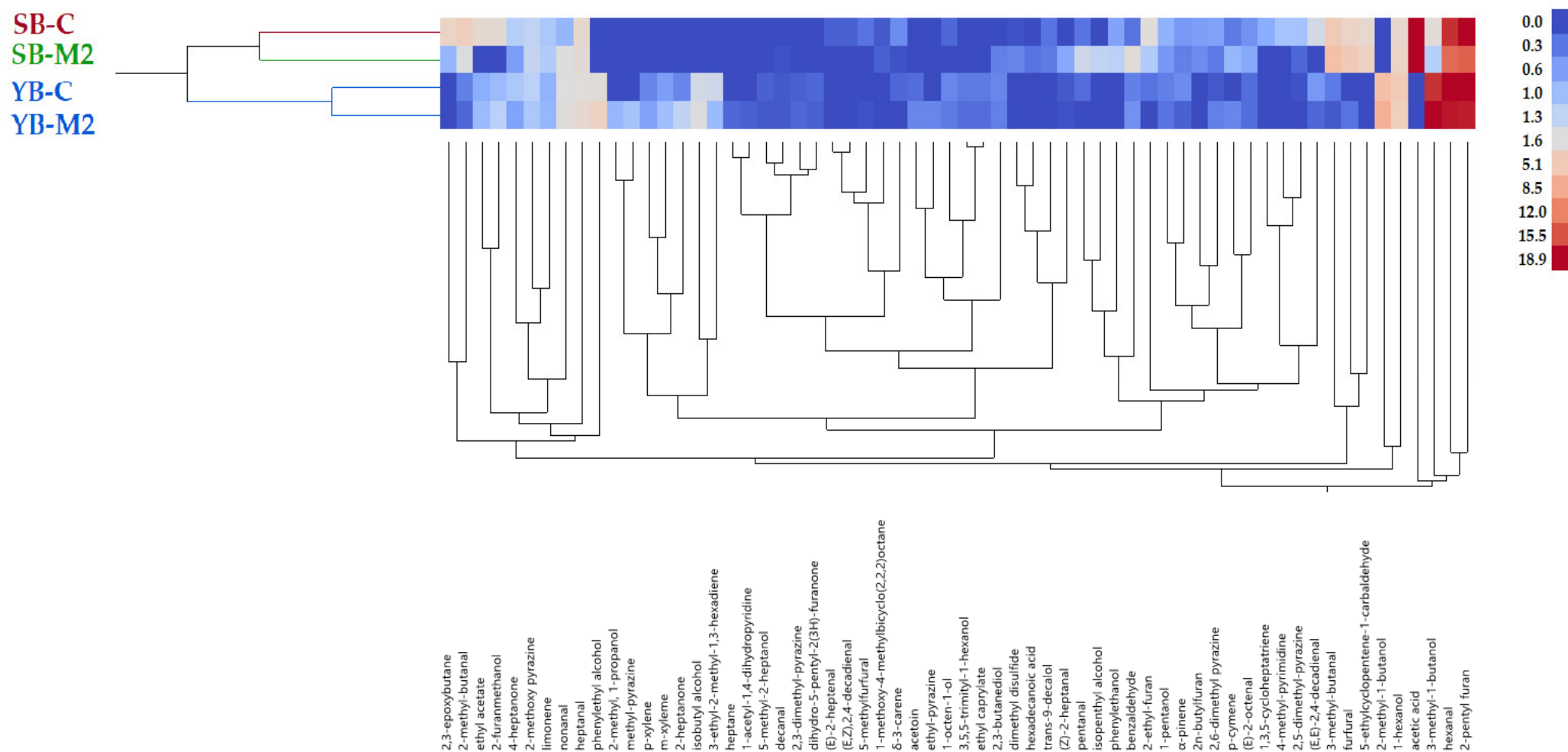
Parameters	Units	M2
<i>Chemical</i>		
Humidity	% w/w	11.63 $\pm$ 0.22
Ashes	% w/w	1.65 $\pm$ 0.12
Proteins	% w/w	12.22 $\pm$ 0.26
Total fats	% w/w	2.13 $\pm$ 0.43
Total dietary fiber	% w/w	4.72 $\pm$ 0.32
Maltose	% w/w	5.28 $\pm$ 0.27
Glucose	% w/w	0.33 $\pm$ 0.04
Fructose	% w/w	0.16 $\pm$ 0.03
Sucrose	% w/w	0.76 $\pm$ 0.07
Wet gluten	% w/w	33.92 $\pm$ 2.12
Dry gluten	% w/w	11.12 $\pm$ 1.42
Gluten index	% w/w	56.73 $\pm$ 13.01
Total Starch	% w/w	78.13 $\pm$ 0.82
Falling number	Seconds	343 $\pm$ 15
Total polyphenol	mg GAE /kg dm	600 $\pm$ 27
Total flavonoids	mg CE /g dm	50.7 $\pm$ 1.2
ABTS	$\mu$ mol TE /g dm	0.97 $\pm$ 0.07
DPPH	$\mu$ mol TE /g dm	0.55 $\pm$ 0.05
FRAP	$\mu$ mol TE /g dm	1.09 $\pm$ 0.06
<i>Technological</i>		
W	10 <sup>-4</sup> joules	165 $\pm$ 17
P	mm	85 $\pm$ 14
L	mm	60 $\pm$ 10
P/L		1.41 $\pm$ 0.72
G		19.6 $\pm$ 1.6

**Table S2.** Complete headspace compositions of baked bread as a function of flour and leavening agent

VOCs compounds	SB-C	SB-M2	YB-C	YB-M2
2,3-epoxybutane	3.70 <sup>a</sup>	0.10 <sup>b</sup>	n.d.	n.d.
acetic acid	19.30 <sup>b</sup>	22.75 <sup>a</sup>	n.d.	n.d.
ethyl acetate	2.70 <sup>a</sup>	n.d.	0.81 <sup>c</sup>	0.95 <sup>b</sup>
2-methyl, 1-propanol	n.d.	n.d.	0.21 <sup>b</sup>	0.90 <sup>a</sup>
isobutyl alcohol	n.d.	n.d.	1.50 <sup>b</sup>	1.75 <sup>a</sup>
3-methyl-butanal	5.10 <sup>b</sup>	6.35 <sup>a</sup>	0.35 <sup>c</sup>	0.12 <sup>d</sup>
2-methyl-butanal	4.55 <sup>a</sup>	1.61 <sup>b</sup>	0.40 <sup>c</sup>	0.22 <sup>d</sup>
pentanal	0.30 <sup>b</sup>	1.45 <sup>a</sup>	0.25 <sup>b</sup>	n.d.
heptane	n.d.	n.d.	n.d.	0.21 <sup>a</sup>
2-ethyl-furan	1.90 <sup>a</sup>	1.15 <sup>b</sup>	0.30 <sup>c</sup>	n.d.
acetoin	n.d.	n.d.	0.25 <sup>b</sup>	0.45 <sup>a</sup>
3-methyl-1-butanol	1.20 <sup>c</sup>	0.40 <sup>d</sup>	17.30 <sup>b</sup>	22.45 <sup>a</sup>
isopentyl alcohol	n.d.	1.40 <sup>a</sup>	n.d.	0.30 <sup>b</sup>
2-methyl-1-butanol	n.d.	n.d.	6.35 <sup>b</sup>	8.05 <sup>a</sup>
1-pentanol	0.95 <sup>a</sup>	0.60 <sup>b</sup>	0.40 <sup>c</sup>	0.30 <sup>d</sup>
1,3,5-cycloheptatriene	0.92 <sup>a</sup>	n.d.	n.d.	n.d.
2,3-butanediol	0.10 <sup>b</sup>	n.d.	0.45 <sup>a</sup>	0.40 <sup>a</sup>
hexanal	14.40 <sup>c</sup>	13.80 <sup>d</sup>	20.90 <sup>a</sup>	18.45 <sup>b</sup>
methyl-pyrazine	n.d.	0.85 <sup>a</sup>	n.d.	0.25 <sup>b</sup>
furfural	3.65 <sup>b</sup>	5.05 <sup>a</sup>	n.d.	0.30 <sup>c</sup>
4-methyl-pyrimidine	n.d.	0.85 <sup>a</sup>	n.d.	n.d.
5-methyl-2-heptanol	n.d.	n.d.	0.25 <sup>a</sup>	0.10 <sup>b</sup>
2-furanmethanol	n.d.	n.d.	0.95 <sup>b</sup>	1.25 <sup>a</sup>
p-xylene	n.d.	n.d.	1.45 <sup>a</sup>	0.70 <sup>b</sup>
m-xylene	n.d.	n.d.	0.65 <sup>b</sup>	1.00 <sup>a</sup>
1-hexanol	2.05 <sup>d</sup>	3.50 <sup>c</sup>	4.95 <sup>a</sup>	4.40 <sup>b</sup>
2-heptanone	n.d.	n.d.	0.45 <sup>b</sup>	1.30 <sup>a</sup>
4-heptanone	1.20 <sup>a</sup>	0.65 <sup>c</sup>	1.10 <sup>b</sup>	0.70 <sup>c</sup>
2n-butylfuran	0.65 <sup>a</sup>	0.50 <sup>b</sup>	n.d.	n.d.
heptanal	2.95 <sup>a</sup>	2.40 <sup>c</sup>	1.90 <sup>d</sup>	2.75 <sup>b</sup>
2-methoxy pyrazine	1.30 <sup>b</sup>	1.35 <sup>b</sup>	1.85 <sup>a</sup>	1.10 <sup>c</sup>
2,5-dimethyl-pyrazine	1.05 <sup>a</sup>	0.20 <sup>b</sup>	0.10 <sup>c</sup>	0.05 <sup>c</sup>
ethyl-pyrazine	n.d.	0.75 <sup>a</sup>	n.d.	0.45 <sup>b</sup>
2,3-dimethyl-pyrazine	n.d.	n.d.	0.15 <sup>b</sup>	0.20 <sup>b</sup>
2,6-dimethyl pyrazine	0.05 <sup>b</sup>	0.35 <sup>a</sup>	0.10 <sup>b</sup>	0.40 <sup>a</sup>
$\alpha$ -pinene	0.60 <sup>a</sup>	0.40 <sup>c</sup>	0.50 <sup>b</sup>	0.15 <sup>d</sup>
(E)-2-heptenal	0.15 <sup>b</sup>	0.40 <sup>a</sup>	n.d.	n.d.
(Z)-2-heptanal	n.d.	0.75 <sup>a</sup>	0.10 <sup>b</sup>	0.05 <sup>b</sup>
benzaldehyde	0.30 <sup>d</sup>	1.95 <sup>a</sup>	0.40 <sup>c</sup>	0.55 <sup>b</sup>
5-methylfurfural	0.30 <sup>a</sup>	n.d.	n.d.	0.05 <sup>b</sup>
1-octen-1-ol	0.20 <sup>c</sup>	n.d.	0.45 <sup>a</sup>	0.35 <sup>b</sup>
hexadecanoic acid	n.d.	0.30 <sup>a</sup>	n.d.	n.d.
2-pentyl furan	20.50 <sup>b</sup>	15.45 <sup>d</sup>	24.30 <sup>a</sup>	18.25 <sup>c</sup>

δ-3-carene	0.50 <sup>b</sup>	0.75 <sup>a</sup>	n.d.	n.d.
p-cymene	0.35 <sup>b</sup>	0.90 <sup>a</sup>	n.d.	n.d.
limonene	1.10 <sup>a</sup>	1.15 <sup>a</sup>	0.85 <sup>b</sup>	0.90 <sup>b</sup>
3-ethyl-2-methyl-1,3-hexadiene	n.d.	n.d.	1.45 <sup>a</sup>	0.95 <sup>b</sup>
1-acetyl-1,4-dihydropyridine	n.d.	n.d.	0.05 <sup>b</sup>	0.15 <sup>a</sup>
5-ethylcyclopentene-1-carbaldehyde	1.90 <sup>b</sup>	6.10 <sup>a</sup>	n.d.	n.d.
phenylethanol	0.70 <sup>b</sup>	1.25 <sup>a</sup>	n.d.	n.d.
3,5,5-trimethyl-1-hexanol	n.d.	n.d.	0.35 <sup>a</sup>	0.25 <sup>a</sup>
(E)-2-octenal	0.55 <sup>b</sup>	0.75 <sup>a</sup>	0.25 <sup>c</sup>	0.25 <sup>c</sup>
nonanal	0.90 <sup>d</sup>	1.65 <sup>c</sup>	2.65 <sup>a</sup>	1.80 <sup>b</sup>
phenylethyl alcohol	n.d.	n.d.	2.10 <sup>b</sup>	4.10 <sup>a</sup>
ethyl caprylate	n.d.	n.d.	0.35 <sup>b</sup>	0.25 <sup>b</sup>
decanal	n.d.	n.d.	0.10 <sup>b</sup>	0.10 <sup>b</sup>
(E,Z)-2,4-decadienal	0.35 <sup>a</sup>	n.d.	n.d.	n.d.
(E,E)-2,4-decadienal	1.50 <sup>a</sup>	n.d.	0.90 <sup>b</sup>	0.20 <sup>c</sup>
1-methoxy-4-methylbicyclo(2,2,2)octane	n.d.	0.25 <sup>a</sup>	n.d.	n.d.
dihydro-5-pentyl-2(3H)-furanone	n.d.	n.d.	0.20 <sup>a</sup>	0.15 <sup>a</sup>
trans-9-decalol	0.30 <sup>a</sup>	0.35 <sup>a</sup>	n.d.	n.d.
1H-indene,2,3-dihydro-1,1,3-trimethyl-3-phenyl	n.d.	n.d.	0.11 <sup>b</sup>	0.21 <sup>a</sup>
<b>Total</b>	<b>98.22</b>	<b>98.46</b>	<b>98.48</b>	<b>98.21</b>

n.b.= not determinated. In the same row, different letters indicate significant differences among samples.



**Figure S1.** Hierarchical cluster analysis (HCA) based on VOCs of baked bread as a function of flour and leavening agent.