

Table S1 Factors and levels used in Box – Behnken design

Factor	-1	0	1
Inoculation proportion (v/v)	1:3	1:4	1:5
Fermentation temperature (°C)	28	30	32
Fermentation time (h)	48	72	96

Table S2 Ten sensors performance of the e-nose

Number	Sensor name	Sensitized material
1	W1C	Aromatic ingredients
2	W5S	Oxynitride
3	W3C	Aromatic ingredients
4	W6S	Hydrogen
5	W5C	Alkyl aromatic components
6	W1S	Short chain alkanes
7	W1W	Sulfide
8	W2S	Alcohol
9	W2W	Organic sulfide
10	W3S	Alkane

Table S3 Response surface experimental design and results

Number	Inoculation proportion (v/v)	Fermentation temperature (°C)	Fermentation time (h)	Total ester (g/L)
1	1:3	28	72	3.68
2	1:5	28	72	3.66
3	1:3	32	72	3.67
4	1:5	32	72	3.72
5	1:3	30	48	3.64
6	1:5	30	48	3.59
7	1:3	30	96	3.58
8	1:5	30	96	3.56
9	1:4	28	48	3.67
10	1:4	32	48	3.64
11	1:4	28	96	3.61
12	1:4	32	96	3.71
13	1:4	30	72	3.94
14	1:4	30	72	3.95
15	1:4	30	72	3.94
16	1:4	30	72	3.92
17	1:4	30	72	3.86

Fitting analysis of the test data obtained the regression equation for total ester yield (Y) of navel orange fermented beverage:

$$Y=3.92+2.5A+0.017B+0.011C-0.018D-0.035AB-0.028AC+5.00E-003AD-0.018BC-7.500E-003BD+0.032CD-0.21A^2-0.17B^2-0.081C^2-0.16D^2$$

Table S4 Response surface experimental design and results (µg/L)

	<i>Saccharomyces cerevisiae</i> SC-125	Angel Yeast SY	Co-fermentation
Ethyl caproate	39.59	102.54	135.25
Ethyl caprylate	272.18	862.2	1566.06
Methyl octanoate	104.55	115.62	427.12
Methyl caprate	688.11	341.01	965.76
Methyl palmitate	180.66	245.31	805.03
Ethyl palmitate	334.59	546.56	1884.92
Ethyl caprate	942.29	765.76	2495.75
Ethyl acetate	278.52	262.11	364.86
Ethyl laurate	226.48	310.53	424.61
Phenethyl acetate	799.09	806.23	1376.09
Isoamyl acetate	127.49	108.92	154.32
Ethyl 3-Phenylpropionate	27.93	25.86	60.58
Dibutyl phthalate	24.10	36.43	112.28
Octadecanoic acid,ethyl ester	20.42	35.62	114.62
Methyl oleate	120.50	0	218.75
Andrographolide	2.01	5.23	16.43
Isoamyl caprylate	0	0	15.84

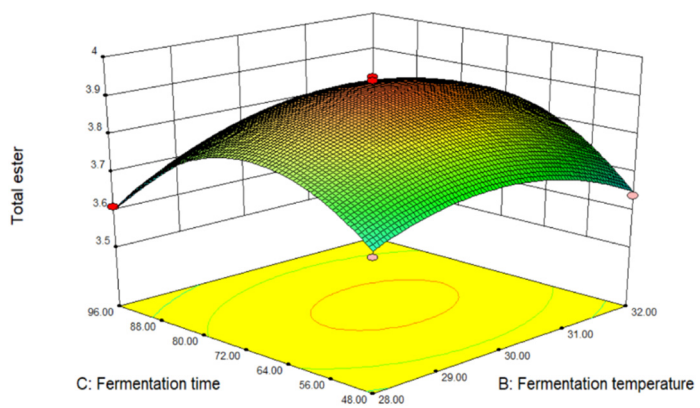
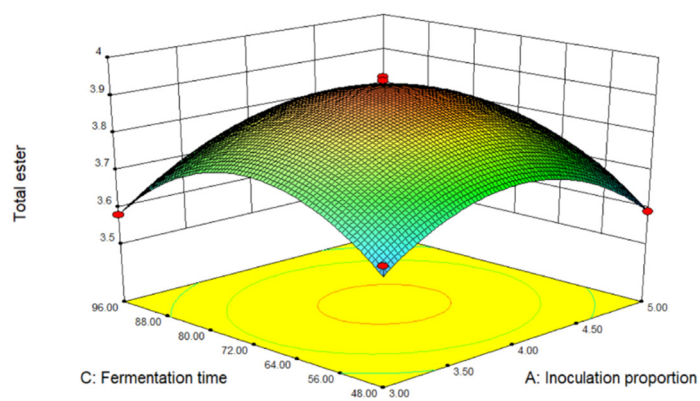
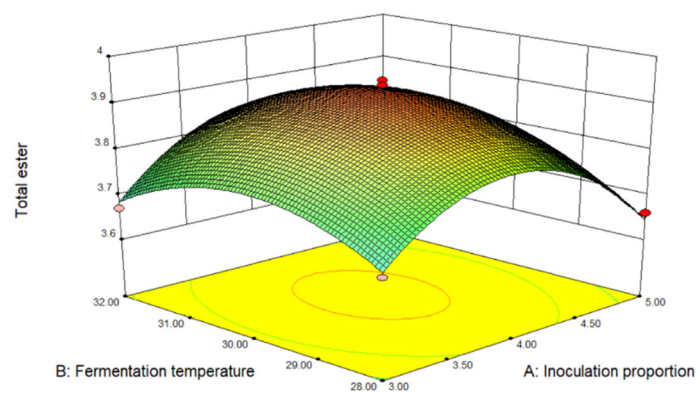


Figure. S1 Interaction between single factors