Supplement Table 1: Anthropometric comparison of the intervention groups.

	Placebo (n=69)	**Vitamins & minerals** (n=76)	**FSMP** (n=69)
male [%]	**50**	**53**	**65**
female [%]	**50**	**47**	**35**
mean age [years]	**24.52** +/-5.78	**25.59** +/-8.51	**25.98** +/-6.73
median	23	23	24
min.	18	18	18
max.	52	65	54
average body-mass-index [kg/m²]	**23.96** +/-3.47	**23.90** +/-2.70	**24.38** +/-3.42
median	23.86	23.81	24.04
min.	17.69	17.80	15.06
max.	33.27	30.99	34.71
average body weight [kg]	**73.1** +/-13.41	**74.8**+/-12.83	**77.1** +/-12.59
median	74.5	71.7	77.1
min.	43.7	44.7	51.6
max.	107.8	104.8	104.2
average body water [%]	**52** +/-0.05	**53** +/-0.06	**53** +/-0.04
median	55	53	55
min.	37	36	43
max.	60	66	60
average body fat [%]	**23** +/-0.07	**23** +/-0.07	**23** +/-0.07
median	21	21	21
min.	13	8	14
max.	47	48	52

average body musculature [%]	**39** +/-0.04	**39** +/-0.04	**40** +/-0.04
median	40	39	41
min.	26	26	31
max.	46	48	45

Anthropometric parameters including gender, age, BMI (in kilogram per square height) are shown. Additionally, fat, muscle, and body water contents of participants (n=number) are shown as percentages. Mean values, minimums (min), maximums (max), medians, and standard deviations are indicated as well.

Supplement Table 2: Consumer behaviour.

Consumed compounds	Placebo (n=69)	Vitamins & minerals (n=76)	FSMP (n=69)
Ø alcohol [g/kg]	**1.63 +/**-0.31	**1.57 +/**-0.29	1.54+/-0.19
median	1.57	1.52	1.54
min.	0.48	0.48	0.55
max.	3.29	3.18	2.32
Ø alcohol [ml/min]	**0.62 +/**-0.13	**0.62 +/**-0.13	**0.62 +/**-0.09
median	0.60	0.57	0.60
min.	0.15	0.15	0.16
max.	1.20	1.42	1.00
Ø beer [ml/kg]	**26.55 +/**-10.23	**25.02 +/**-10	**24.84 +/**-8.81
median	25.52	25.00	25.63
min.	0.00	0.00	0.00
max.	67.99	71.09	60.48
Ø mixed beer (Radler) [ml/kg]	**4.13 +/**-3.61	**4.22 +/**-3.83	**5.40 +/**-4.53
median	0.00	0.00	0.00
min.	0.00	0.00	0.00
max.	26.00	47.56	46.44
Ø wine [ml/kg]	**5.19 +/**-3.8	**5.22 +/**-3.38	**4.78 +/**-3.42
median	0.00	2.21	0.96
min.	0.00	0.00	0.00
max.	29.20	23.39	24.39
Ø wine spritzer [ml/kg]	**1.29 +/**-2.33	**1.29 +/**-1.96	**1.10 +/**-2.31
median	0.00	0.00	0.00
min.	0.00	0.00	0.00

max.	28.28	22.86	26.49
Ø sparkling water [ml/kg]	**1.32** +/-1.35	**2.10** +/-2.37	**2.63** +/-2.42
median	0.00	0.00	0.00
min.	0.00	0.00	0.00
max.	10.39	27.91	24.28
Ø mineral water [ml/kg]	**3.01** +/-2.76	**1.66** +/-1.61	**3.20** +/-2.97
median	0.00	0.00	0.00
min.	0.00	0.00	0.00
max.	24.56	14.77	31.01
smokers [%]	**22**	**22**	**22**
meal consuming participants [%]	**26**	**37**	**21**

The different consumed compounds of the three different intervention groups (n=number of participants) are shown. The detailed amounts are is given in ml per kg and g per kg body weight. Mean values (ø), minimums (min), maximums (max), medians, and standard deviations are indicated as well.

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Supplement table 3: Acute Hangover Scale (AHS)

Symptoms	FSMP (n=69)	SD	p		Vitamins & minerals (n=76)	SD	p		Placebo (n=69)	SD
thirst	5.32	2.69	0.34		5.72	2.43	0.97		5.74	2.44
exhaustion	4.81	2.54	0.63		4.74	2.44	0.75		4.61	2.35
fatigue	5.68	2.56	0.51		6.07	2.35	0.72		5.93	2.31
drowsiness	4.64	2.71	0.57		4.99	2.54	0.75		4.86	2.44
headache	1.99	2.49	0.03		2.34	2.91	0.19		2.97	2.87
dry mouth	3.83	3.33	0.47		4.43	2.82	0.62		4.2	2.81
nausea	1.17	2.07	0.04		2.62	8.19	0.55		2.03	2.64
weakness	3.33	2.51	0.88		3.66	2.79	0.56		3.40	2.59
attention ($\downarrow$)	4.14	2.59	0.53		4.33	2.8	0.31		3.86	2.77
concentration ($\downarrow$)	3.59	2.57	1.00		4.01	2.94	0.37		3.59	2.67
indifference	2.59	2.60	0.04		3.37	2.91	0.680		3.57	2.82
Responsiveness ($\downarrow$)	3.32	2.58	0.84		3.78	2.58	0.2		3.23	2.52
($\downarrow$) appetite	2.39	2.95	0.09		2.82	2.92	0.34		3.33	3.47
($\downarrow$) skills	3.06	2.69	0.78		3.37	2.66	0.68		3.19	2.76
excitement	0.91	1.70	0.22		0.93	1.46	0.21		1.29	1.9
dizziness	1.84	2.44	0.27		2.36	2.80	0.99		2.33	2.77
memory problems	2.2	2.93	0.84		2.25	2.81	0.76		2.10	2.90
gastrointestinal complaints	1.36	2.14	0.32		1.43	2.28	0.42		1.77	2.62
fuzziness	2.14	2.13	0.44		2.21	2.36	0.36		1.86	2.28
stomach pain	0.99	2.15	1.002		1.00	1.95	0.97		0.99	2.12
trembling	1.59	2.58	0.85		1.49	2.31	0.96		1.51	2.32
impaired balance	1.74	2.25	0.58		1.78	2.25	0.63		1.97	2.60
restlessness	1.04	1.68	0.03		1.55	2.08	0.55		1.76	2.03
chills	0.23	0.83	0.16		0.13	0.53	0.05		0.57	1.77
sweating	1.04	2.11	0.75		0.96	1.64	0.94		0.94	1.53
disorientation	0.9	1.87	0.52		1.21	1.86	0.78		1.12	2.08

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noise sensitivity (↑)	**1.26**	2.21	0.37		**1.32**	2.03	0.42		**1.62**	2.53
light sensitivity (↑)	**1.83**	2.54	0.26		**1.95**	2.53	0.39		**2.32**	2.6
emotional dulling	**1.12**	1.95	0.21		**1.85**	2.81	0.53		**1.58**	2.35
muscle pain	**0.62**	1.6	0.08		**1.11**	2.00	0.75		**1.22**	2.26
palatability	**1.46**	2.08	0.29		**1.57**	2.09	0.43		**1.87**	2.47
contrition	**0.59**	1.61	0.14		**1.22**	2.26	0.78		**1.12**	2.42
confusion	**0.84**	1.79	0.41		**1.14**	2.13	0.9		**1.1**	1.96
guiltiness	**0.42**	1.48	0.18		**0.47**	1.30	0.21		**0.84**	2.09
gastric irritation	**1.49**	2.41	0.75		**1.30**	2.14	0.4		**1.62**	2.44
(↑) impulsivity	**0.96**	1.74	0.26		**1.00**	1.83	0.32		**1.31**	1.91
heat / cold flushes	**0.87**	2.13	0.18		**0.82**	1.48	0.08		**1.36**	2.11
vomit	**0.37**	1.21	0.53		**0.24**	0.73	0.21		**0.54**	1.83
palpitations	**0.94**	1.89	0.59		**0.93**	1.66	0.54		**1.12**	1.91
depressive mood	**0.61**	1.43	0.15		**0.74**	1.56	0.32		**1.04**	2.07
heart pains	**1.14**	1.83	0.14		**0.96**	1.54	0.03		**1.67**	2.27
tinnitus	**0.51**	1.26	0.77		**0.32**	0.87	0.23		**0.58**	1.63
nystagmus	**0.56**	1.50	0.92		**0.67**	1.34	0.53		**0.54**	1.23
irritability	**1.29**	2.18	0.27		**1.26**	2.11	0.22		**1.71**	2.25
breathing problems	**0.59**	1.47	0.62		**0.72**	1.88	0.35		**0.48**	1.26
anxiety	**0.17**	0.98	0.86		**0.29**	1.14	0.41		**0.14**	0.97
suicidal thoughts	**0.01**	0.12	0.32		**0.09**	0.60	0.66		**0.06**	0.34
AHS-total-score	**83.38**	55.53	0.21		**92.08**	57.54	0.76		**96.36**	64.63

The mean values of the intensities from 0 (no complaints) to 10 (extreme complaints) of 47 hangover symptoms and the eAHS total scores with the respective standard deviations (SD) and the statistical significances (p-value) of all three intervention groups are given. Statistically significant parameters are highlighted in grey; (↓) indicates decrease(d), and (↑) indicates increase(d).

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Supplement table 4: Intervention assessment.

	Placebo	Anti-hangover compounds	p-value
FSMP (n=69)	31%	69%	< 0.001
Vitamins & minerals (n=76)	72%	28%	0.750454852
Placebo (n=69)	70%	30%	-

Based on the perceived effectiveness of the intervention, the participants of the intervention groups were asked whether they had received the placebo or the anti-hangover intervention. The statistical relevance p is calculated and indicated.

Supplement table 5: Assessment of the effect inferred by the participants**.**

	Mean effectiveness (0-10)	p-value
FSMP (n=69)	4.22 +/-1.485	0.02475173
Vitamin & mineral (n=76)	2.67 +/-1.30	0.33607461
Placebo (n=69)	3.10 +/-1.365	-

The intervention groups were asked how much they observed the perceived effects of the received intervention on a scale from 0 (no effect) to 10 (extremely strong effect). The respective numbers (n) within each group are given and the standard deviations are calculated.