Table S1. Olfactory classical PER conditioning. Set of variables considered in the logistic regression models (GLM) effects models explaining bees' responses in the olfactory PER conditioning to different compounds.

Compound	Phase	Variable	Chi sq	P-values
Caffeine	Acquisition	TrialxTreatment	33.13	0.7687
		Treatment	21.93	**0.0173**
		Trial	57.23	**2.30E-09**
Arginine	Acquisition	TrialxTreatment	4.67	0.5865
		Treatment	48.22	**3.42E-08**
		Trial	22.61	**0.0486**
Mixtures	Acquisition	TrialxTreatment	3.31	0.7690
		Treatment	80.72	**0.0177**
		Trial	37.13	**4.32E-05**

Table S2. Short-term memory and long-term memory tests. Statistical evaluation of the logistic regression models (GLM) that include treatment as the only explanatory variable in the tests of short-term memory (STM) and long-term memory (LTM). Values in **bold** represent P-values<0.05, and in *italic* P-values>0.05 by no more than one order of magnitude of difference.

Compound	Phase	Variable	Deviance	P-values
Caffeine	STM	Treatment	59.08	*0.0521*
	LTM	Treatment	22.92	0.3180
Arginine	STM	Treatment	5.47	*0.0650*
	LTM	Treatment	59.22	*0.0518*
Mixtures	STM	Treatment	74.34	**0.0041**
	LTM	Treatment	10.80	**0.0045**

Table S3. Short-term memory and long-term memory tests. Comparisons. Z ratio values (below diagonal) and p-values (above diagonal) obtained from comparisons between treatments given by the mixtures group since it was the only one that showed significant differences in the GLM that included the treatment as an explanatory variable. "Lower conc." stands for the mix between Caf. 0,15mM + Arg. 0.01mM, and "Higher conc." stands for the mix between Caf. 0.15mM + Arg. 0.03mM. Values in **bold** represent P-values<0.05, and in *italic* P-values>0.05 by no more than one order of magnitude of difference.

STM			
Treatment	SS Mixtures	Lower conc.	Higher conc.
SS Mixtures		*0.0502*	**0.0196**
Lower conc.	2.34		0.9157
Higher conc.	-2.69	-0.40	
LTM			
Treatment	SS Mixes	Lower conc.	Higher conc.
SS Mixtures		**0.0102**	**0.0277**
Lower conc.	2.90		0.8021
Higher conc.	-2.56	0.63	

Table S4. Survival. Statistical analysis of the logistic regression models (GLM) that include treatment as the only explanatory variable of the survival of individuals over 24 hours after the olfactory classical conditioning and tests protocols. "Lower conc." stands for the mix between Caf. 0,15mM + Arg. 0.01mM, and "Higher conc." stands for the mix between Caf. 0.15mM + Arg. 0.03mM

Compound	Phenomenon analyzed	Variable	Deviance	P-values
Caffeine	Survival	Treatment	0.386	0.82450
Arginine	Survival	Treatment	3.293	0.19270
Mixtures	Survival	Treatment	17.646	**0.00015**

Table S5. Survival. Comparisons. Z ratio values (below diagonal) and p-values (above diagonal) obtained from comparisons between treatments given by the mixtures group since it was the only one that showed significant differences in the GLM that included the treatment as an explanatory variable. "Lower conc." stands for the mix between Caf. 0,15mM + Arg. 0.01mM, and "Higher conc." stands for the mix between Caf. 0.15mM + Arg. 0.03mM

Treatment	SS Mixtures	Lower conc.	Higher conc.
SS Mixtures		0.691	**0.014**
Lower conc.	2.34		**0.044**
Higher conc.	2.69	0.40	