Table S1 Summary of reported concentrations of carbonyls and brief description of the electronic cigarette (ECIG) type, coil type, the battery power, the coil temperature (T) and the humectant (propylene glycol (PG) and Vegetable Glycerin (VG)) content. Also included is the explanation of the high emission and variability of carbonyls in different systems.

ECIG type	Coil type	Power (W)	Coil T (°C)	PG/VG ratio	Carbonyls (μg/L vapor)	High carbonyls in vapors are associated with:			Reference
						Humectant	Other Factors	Power	
Tank device	Single bottom coil	4.27–9.6	NA	100/0–0/100	FA (0.0-0.1) AA (0.0-0.1) Acet (0.1-0.3) BA (0.0-0.2)	PG	Nicotine solvents	Battery voltage	Kosmider et al. (2014)
NA	NA	NA	NA	NA	FA (ND-61.8) AA (ND-47.3) Acr (ND-12.0) PA (ND-27.3) GA (ND-29.1) MGA (ND-22.0)	ECIG liquid	ECIG liquid in contact with the hot coil	Battery voltage	Bekki et al. (2014)
Tank device	NA	3.3-5 V (resistance not mentioned)	NA	NA	FA hemiacetal (ND-760)	PG and VG oxidizing reactions		ECIG operating at 5 V	Jensen et al. (2015)
Tank device	NA	6.5-10.0	NA	50/50	FA (ND-689.2) AA (ND-412.6) Acet (ND-45.0) Acr (ND-420.8)		Dry-puff	Minimal emission under normal and newer generation of high-power	Farsalinos et al. (2015)
Disposable, prefilled and tank devices	Single coil	3.1-6.7	NA	80/20-0/100	FA (0.6-5.1) AA (0.5-21.2) Acet (0.7-3.5) Acr (0-1.4) PA (0-2.9)	No correlation with PG/VG ratio		ECIG brand and power output	El-Hellani et al. (2016)
Third	Single	5.0-25.0	Dry coil:	45/55	FA (0.5-31.2)	Oxidation of		Battery	Geiss et al.

generation MODs device	bottom coil		380-950 Wet Coil: 120-320		AA (0.3-7.0) Acr (0-0.1)	VG		output	(2016)
Tank device	Single bottom coil or single top coil or dual bottom coil	5.2-25.0	NA	50/50	FA (0-0.9) AA (0-0.7) Acr (0-0.1)	Aerosol and liquid decomposition as competing pathways	Dry puff	Device type and power	Gilmann et al. (2016)
Direct dripper	Direct-dripping atomizer	4.6	130-350	100/0	FA (8.6-38.4) AA (117.5-511.4) Acet (12.3-85.8) Acr (0-0.7) PA (22.5-137.2) BA (0.3-2.7)	Maximum coil temperature ranged from 130°C to more than 350°C	Local liquid dry-out and local overheating	Dripping leads to potentially higher temperatures	Talih et al. (2016)
Tank device	Single or dual coil	4.2-9.2	Temperature of the emitted vapor was measured	50/50 or unknown	FA (1060.0-1940.0) AA (200.0-1000.0) Acr (60.0-430.0)		• Higher for a single-coil versus a double-coil • Ageing of the device	Higher voltage	Sleiman et al. (2016)
Prefilled and tank devices	Single coil	4.6-16.6	NA	NA	FA (0.2-900.9) AA (0.2-584.7) Acet (1.4-888.7) Acr (0-17.8) PA (0.7-19.7)		Puffing topography	Battery power	Ogunwale et al. (2017)

					BA (0.5-14.9)			
Tank device	Single and dual coil	4.0-15.0	NA	56/44	AA Acet Acr PA	ECIG device design	Metal catalysis	Power latent heat transfer from the coils to the liquid	Jensen et al. (2017)
Pyrolysis reactor	Stainless steel tube	NA	50-318	50/50	FA (0.2-500.0) AA (ND-132.0) Acr (ND-24.0)	Increases with the liquid mass consumed by vapers		Detected at 215 °C for both PG and VG Recommend to examine the effect of different heating metals	Wang et al. (2017)
Sub-ohm and regular ECIG tank device	Sub-ohm coils and regular single coil	4-100	NA	50/50	FA (5.1-24.2) AA (8.4-288.1) Acet (2.3-55.4) Acr (0-1.3) PA (0.6-24.7) GA (0-15.5) MGA (31.4-185.5)	Liquid consumed		Power per unit heating coil surface area is a superior predictor than power alone	Talih et al. (recently submitted)