Supplementary Material

Electroanalytical Studies on Green Leaf Volatiles for Potential Sensor Development

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Table S1. Comparison of Ep_a and Ip_a values of *cis*-3-hexenol, *cis*-hexenyl acetate and hexyl acetate on the gold electrode using CV technique.

Analyte	Concentration (mM)	Ep_a (V)	Ip_a (µA)
cis-3-hexenol	0.5	0.18	4.6
cis-hexenyl acetate	0.5	0.2	4.4
Hexyl acetate	0.5	0.2	2.8

Figure S1. Koutecky-Levich plots from the RDE voltammogram results of 6.3 mM *cis*-3-hexenol, 0.7 mM *cis*-hexenyl acetate and 3.7 mM hexyl acetate oxidation by gold disk electrode in 0.1 M NaOH.
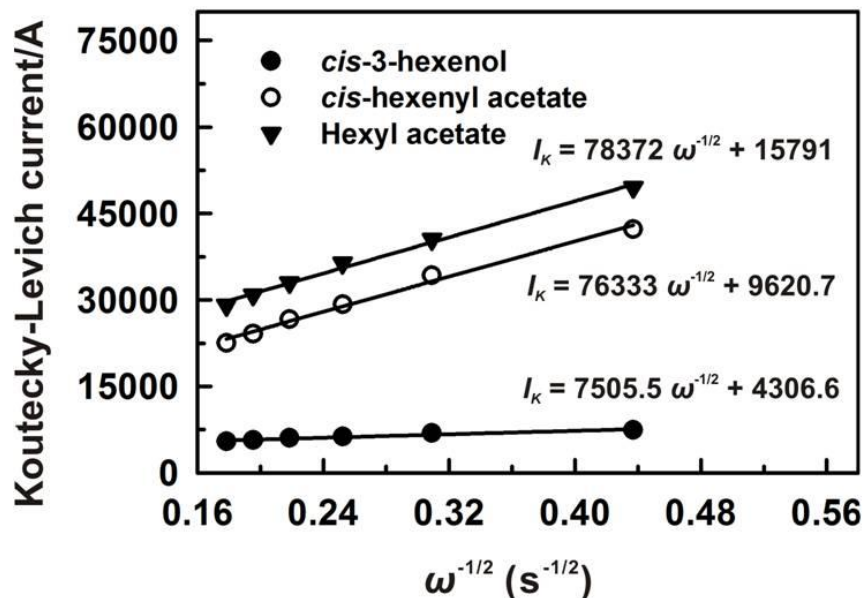
Determination of Electroanalytical Parameters

The kinetic calculations were carried out within Levich region obtained in hydrodynamic studies. The relationship between the limiting current and rotation rate can be given by Levich equation,

$$I_L = 0.62nFAD^{2/3}\omega^{-1/2}v^{-1/6}c_0 \qquad (1)$$

where, I_L is the limiting current, n number of electrons, F faraday constant, A active area of disk electrode, D diffusion coefficient, ω angular velocity of the electrode, v kinematic viscosity, c_0 bulk concentration. In these experiments if the electron transfer process on the gold electrode is assumed to be fast, in tune with the experimental conditions, then the rate determining step must have been one of following, (i) mass transfer process of analytes in the solution or (ii) electron-transfer process at the electrode/solution interface. In case, the oxidation of plant volatiles at gold electrode controlled solely by mass transfer process in the solution, then the relationship between the limiting current and rotating speed should obey the following Koutecky-Levich equation,

$$\frac{1}{I_L} = \frac{1}{I_K} + \frac{1}{B} \qquad (2)$$

where I_L is the limiting current, I_K is the kinetic current and B is the Levich slope given in equation (2). The heterogeneous rate constant of the plant volatiles can be calculated by the following equation (3).

$$I_K = nFAkc_0 \qquad (3)$$

where, I_K is the kinetic current, n number of electrons, F faraday constant, A active area of disk electrode, k heterogeneous rate constant and c_0 bulk concentration. The bulk concentration c_0 of *cis*-3-hexenol, *cis*-hexenyl acetate and hexyl acetate were 6.3, 0.7 and 3.7 mM respectively.

Table S2. Reproducibility of the amperometric electroanalytical results of plant volatiles using gold electrode.

Analyte	Concentration (µM)	SS Current (µA) [a]	% RSD [b]
cis-3-hexenol	1.6	0.5	3.7
	1.8	0.5	3.3
	2.8	0.7	2.8
	4.8	1.0	3.4
	8.8	1.5	3.6
cis-hexenyl acetate	1.6	0.4	1.6
	1.8	0.5	1.0
	2.8	0.6	1.7
	4.8	0.9	1.1
	8.8	1.3	0.3
Hexyl acetate	15.3	0.5771	17.5
	16.3	0.5822	17.9
	18.3	0.615	17.4
	28.3	0.873	16.9
	48.3	1.357	16.6

[a] Normalized SS current.

[b] Three different experimental data were used to calculate RSD.

Figure S2. Different scan rate studies of gold electrode in 0.1 M NaOH. The scan rates studied were 0.04, 0.06, 0.08, 0.1, 0.12, 0.14, 0.16, 0.18 to 0.2 Vs^{-1}.

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