**Supporting Materials**



**Scheme SM. 1**: Molecular structure of GA



**Figure SM1** . (A) Effect of accumulation time on oxidative peak current at different time (a-f: 0, 5, 10, 20, 30, and 40 s, respectively), and (B) Effect of accumulation potential at various potential (a-k: 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, and 700 mV, respectively) of 1.0 mM GA in pH 2.0 PBS at poly(DPASA)/GCE. Inset: plot of Ipa versus (A) accumulation time and (B) accumulation potential.





**Figure SM 2**. AdSSWVs ofpoly(DPASA)/GCE in pH 2.0 PBS containing 1.0 mM GA at (A) various step potentials (a-e: 2, 4, 6, 8 and 10 mV, respectively), amplitude:25 mV, and frequency:15 Hz, (B)various amplitudes (a-f: 20, 25, 30, 35, 40, and 45 mV, respectively), step potential:4 mV, and frequency:15 Hz, and (C) various frequencies (a-e: 10, 15, 20, 25, and 30 Hz, respectively), step potential:4 mV and amplitude:30 mV. Insert: (A) plot of oxidative peak current vs step potential, (B) plot of oxidative peak current vs square wave amplitude, and (C) plot of oxidative peak current vs square wave frequency.



 

**Figure SM 3**. AdSSWVs of poly(DPASA)/GCE in pH 2.0 PBS containing (A) inside body of raw peanut (B) cover of raw peanut samples, (C) AAF, (D) Berejat brand locally available processed peanut butter samples respectively.

**Table SM 1.** Summary of recovery results of GA in peanut samples.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Peanut samples | Initial GA content/ (µM)  | Spiked GA (µM) | Detected GA (µM)a | Recovery (%)b |
|
| Inside body | 11.73 | --- | 11.73±0.033 | --- |
| 11.73 | 60.00 | 68.73±0.034 | 95.00±3.4 |
| 11.73 | 80.00 | 89.48±0.031 | 97.19±3.1 |
| 11.73 | 100.00 | 111.50±0.027 | 99.77 ±2.7 |
| Cover | 23.20 | --- | 23.20±0.029 | ---- |
| 23.20 | 80.00 | 101.50±0.023 | 97.87±2.3 |
| 23.20 | 100.00 | 123.00±0.026 | 99.80±2.6 |
| Commercial butter (AAF) | 6.50 | --- | 6.50±0.018 | --- |
| 6.50 | 80.00 | 85.2±0.028 | 98.38±2.8 |
| 6.50 | 100.00 | 109.7±0.034 | 103.20±3.4 |
| Commercial butter (Berejat) | 5.43 | --- | 5.43±0.020 | --- |
| 5.43 | 80.00 | 83.23±0.029 | 97.25±2.9 |
| 5.43 | 100.00 | 104.73±0.031 | 99.3±3.1 |
|  a Detected mean GA ± RSD, b % Recovery GA ± %RSD |



**Figure SM 4.** AdSSWVs of poly(DPASA)/GCE in pH 2.0 PBS containing raw peanut (inside body) sample solutions in the presence of (A) AA and (B) UA of various concentrations (0.0, 5.0, 10.0, 15.0 and 20.0 μM).



**Figure SM 5**. AdSSWVs of poly(DPASA)/GCE in pH 2.0 PBS containing honey sample solution collected from Gazo Wereda (kebele 01), North Wollo Zone, Ethiopia in the presence of (A) AA, and (B) UA of various concentrations (0.0, 23.0, 46.0, 69.0 and 92.0 μM).

**Table SM 2.** Summary of interference study of GA with different concentrations of AA and UA for honey sample.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Interferent  | Interferent added (µM) | Current response (µA) | Expected current (µA) | % error  |
| AA | 0.0 | 28.60 | 28.60 | ---- |
| 23.0 | 28.33 | 28.60 | 0.95 |
| 46.0 | 28.56 | 28.60 | 0.14 |
| 69.0 | 28.80 | 28.60 | 0.70 |
| 92.0 | 29.20 | 28.60 | 2.18 |
| UA | 0.0 | 28.60 | 28.60 | ---- |
| 23.0 | 28.20 | 28.60 | 1.42 |
| 46.0 | 28.50 | 28.60 | 0.35 |
| 46.0 | 28.70 | 28.60 | 0.35 |
| 92.0 | 29.10 | 28.60 | 1.75 |



**Figure SM 6** Five repetitive AdSSWVs of poly(DPASA)/GCE in pH 2.0 PBS containing 1.0 mM GA recorded in (A) one day, and (B) 15 days: step potential: 4 mV, amplitude: 30 mV, and frequency: 20 Hz.