Fig. S1 XPS data for FePc MOF: (A) survey scan; (B) Fe 2p spectrum. (C) XRD spectra of FePc MOF (black: experimental); (red: simulation).

Fig. S2. CV of without (a) and with vanillin (b) on FePc MOF/GCE.
Fig. S3. DPV of 1.5 μM vanillin at FePc MOF/GCE when coexisting with 150 μM UA and DA.

**Table S1.** Analytical results for the determination of vanillin in human serum.

| Sample | Added (μM) | Found (μM) | Recovery(%, n=5) | RSD(%) |
|--------|------------|------------|------------------|--------|
| Serum  | 15         | 15.5       | 102.9            | 3.16   |

**Table S2.** Analytical results for the determination of vanillin in tablets.

| Sample                  | Labeled amount (mg) | Found (mg) | Percentage of labeled amount (%), n = 5 | RSD (%) |
|-------------------------|---------------------|------------|----------------------------------------|---------|
| Vanillin tablets        | 200                 | UV: 207    | 103.6                                  | 1.18    |
|                         |                     | EC: 204    | 102.3                                  | 3.92    |