**Supplementary Material**

A comparative study using solution analysis, electrochemistry and mass change for the inhibition of carbon steel by the plant alkaloid Voacangine

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### Extraction and identification of Voacangine

Voacanginewas obtained from the stem-bark of *Tabernaemontana contorta* as a greyish needlets in a mixture of Hex/AE 36/64. It is soluble in CHCl3 and DMSO and responds positively to the Meyer’s test giving a yellowish white precipitate and also to the Draggendorf’s test giving a dark-red color characteristic of alkaloids.

Its molecular formula was determined to be C22H28O3N2 on the basis of High-resolution electrospray ionisation mass spectrometry (HRESIMS) (*m/z* 369.21763 [M+H]+for 368.2094).

Based on spectroscopic analysis and by comparism of the spectral data of Voacangine with those described in the literature. Its structure confirmed to be a Voacangine.



**Figure S1**. Chemical structure of Voacangine.

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**Table S1:** Comparison of spectral data of Voacangine. with those in the literature.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Position | 1H (nH, m, *J*) | | 13C | |
| Voacangine | literature | Voacangine | literature |
| 1NH | 7.71 (1H, s) | 7.90 (1H, *s*) | - |  |
| 2 | - | - | 137,7 | 137.3 |
| 3 | 2.81; 2.82 (each1H, d, 11.5) | 2.90; 2.82 (each1H, d, 11.4) | 51.6 | 51.6 |
| 4NH | - | - | - | - |
| 5 | 3.22; 3.33 (each 1H, m) | 3.25; 3.32 (each 1H, m) | 52.7 | 52.6 |
| 6 | 2.97 ; 3.15 (each 1H, m) | 2.92 ; 3.16 (each 1H, m) | 22.3 | 22.2 |
| 7 | - | - | 110.3 | 109.9 |
| 8 | - | - | 129.3 | 129.0 |
| 9 | 6.93 (1H, d, 2.3) | 6.91 ( 1H, d, 2.6) | 100.9 | 100.7 |
| 10  10-OCH3 | 3.85(3H, s) | 3.85 (3H, s) | 154.2; 56.2 | 154.0; 56.0 |
| 11 | 6.86 (1H dd, 8.8; 2.3) | 6.80 (dd, 8.6; 2.6) | 111.9 | 111.8 |
| 12 | 7.14 (1 H d, 8.8) | 7.13 (d, 8.6) | 111.1 | 111.1 |
| 13 | - | - | 130.7 | 130.5 |
| 14 | 1.88 (1H, s, H-14) | 2.89 (1H, s) | 27.5 | 26.9 |
| 15 | 1.30; 1.74 (each 1H, m) | 1.31; 1.74 (each 1H, m) | 32.2 | 31.6 |
| 16 |  |  | 55.3 | 55.7 |
| 17 | 1.90; 2.59 (each 1H, m) | 2.02; 2.60 (each 1H, m) | 36.7 | 36.4 |
| 18 | 0.90 (3H, t, 7.4) | 0.90 (t, 7 ) | 11.8 | 11.5 |
| 19 | 1.44; 1.57 ( each 1H, m) | 1.45(1H, m),  1.60 (1H, m) | 26.9 | 26.4 |
| 20 | 1.33(1 H, m) | 1.32 (1H, m) | 39.3 | 38.9 |
| 21 | 3.55 (1H, brs) | 3.54 (1H, brs) | 57.6 | 57.5 |
|  | 3.71 (3H, s, ZCOOCH3) | 3.73 (3H, s, ZCOOCH3) | 175.8; 53.3 | 15.4; 52..6 |

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