**Table 1.** Structural data of the synthesized compounds

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compound** | **R** | **Melting****Point (ºC)** | **Empirical Formula** | **Molecular****Weight** |
|  |
| **1** | CH3 | 223-225 | C24H25NO3 | 375.47 |
| **2** | C2H5 | 210-212 | C25H27NO3 | 389.49 |
| **3** | CH(CH3)2 | 211-213 | C26H29NO3 | 403.52 |
| **4** | CH2CH(CH3)2 | 170-172 | C27H31NO3 | 417.55 |
| **5** | C(CH3)3 | 243-245 | C27H31NO3 | 417.55 |
| **6** | CH2CH2OCH3 | 197-199 | C26H29NO4 | 419.52 |
| **7** | CH2CH2OCOC(=CH2)CH3 | 155-157 | C29H31NO5 | 473.57 |
| **8** | CH2C6H5 | 167-169 | C30H29NO3 | 451.57 |
|  |
| **9** | CH3 | 259-261 | C24H25NO3 | 375.47 |
| **10** | C2H5 | 244-246 | C25H27NO3 | 389.49 |
| **11** | CH(CH3)2 | 258-260 | C26H29NO3 | 403.52 |
| **12** | CH2CH(CH3)2 | 291-293 | C27H31NO3 | 417.55 |
| **13** | C(CH3)3 | 267-269 | C27H31NO3 | 417.55 |
| **14** | CH2CH2OCH3 | 176-178 | C26H29NO4 | 419.52 |
| **15** | CH2CH2OCOC(=CH2)CH3 | 156-158 | C29H31NO5 | 473.57 |
| **16** | CH2C6H5 | 173-175 | C30H29NO3 | 451.57 |

**Table 2.** Crystal data and details of the structure determination of compound **10**

|  |
| --- |
| -------------------------------------------------------------------------------------------------------------- |
| Formula  | [C25H27NO3](../../../AppData/Local/Temp/hu-ce1a%20_chemical_formula_moiety) |
| Molecular weight  | [389.48](../../../AppData/Local/Temp/hu-ce1a%20_chemical_formula_weight) |
| Crystal system | Orthorhombic |
| Space group  | [*Pbca*](../../../AppData/Local/Temp/hu-ce1a%20_symmetry_space_group_name_H-M) |
| a (Å), b (Å), c(Å) | [10.5179 (2)](../../../AppData/Local/Temp/hu-ce1a%20_cell_length_a), [12.1144 (3)](../../../AppData/Local/Temp/hu-ce1a%20_cell_length_b), [33.6297 (8)](../../../AppData/Local/Temp/hu-ce1a%20_cell_length_c) |
| α (°), β (°), γ (°) | 90, 90, 90 |
| Volume (Å3)  | [4285.03 (18)](../../../AppData/Local/Temp/hu-ce1a%20_cell_volume) |
| Z | 8 |
| D (calculated) (gcm-3) | 1.207 |
| F000  | 1664 |
| Linear absorption coefficient (mm-1) | [0.63](../../../AppData/Local/Temp/hu-ce1a%20_exptl_absorpt_coefficient_mu) |
| Absorption correction type | multi-scan |
| Crystal size (mm) | 0.50 x 0.35 x 0.30 |
| Diffractions radiation type | CuKα |
| λ (Å) | 1.54184 |
| Monochromator | Graphite |
| Diffractions measurement device type | Xcalibur, Ruby, Gemini |
| Diffractions measurement device | ω scans |
| Total reflection number  | 15413 |
| Independent reflection number | 4374 |
| Collected reflection for I > 2σ(I)  | 3821 |
| Rint  | [0.029](../../../AppData/Local/Temp/hu-ce1a%20_diffrn_reflns_av_R_equivalents) |
| h, k, l ranges | -12→12, -13→14, -38→41 |
| θmin , θmax range (°)  | -4.96, 75.64 |
| Solution | Direct methods, SHELXS-97, SHELXL-97, SHELXTL |
| Least squares refine weighting details | *w* = 1/[*σ*2(*F*o2) + (0.0764*P*)2 + 1.7455*P*]where *P* = (*F*o2 + 2*F*c2)/3 |
| Number of variable |  270 |
| R |  0.0479 |
| wR |  0.1326 |
| S(F2)  |  1.043 |
| Δρmax , Δρmin (e/Å3) |  0.39, —0.23 |
| -------------------------------------------------------------------------------------------------------------- |

**Table 3.** Selected bond lengths (Å), bond (°) and torsion angles (°).

|  |
| --- |
| ---------------------------------------------------------------------------------------------------------------- |
| O1—C5 | 1.2319 (19) | O3—C21 | 1.450 (2) |
| O2—C20 | 1.216 (2) | N1—C1 | 1.3642 (19) |
| O3—C20 | 1.3441 (18) | N1—C9 | 1.3905 (19) |
| C20—O3—C21 | 116.23 (13) | C11—C10—C7 | 121.60 (13) |
| C1—N1—C9 | 122.72 (13) | C19—C10—C7 | 119.49 (13) |
| N1—C1—C2 | 116.62 (13) | C10—C11—C12 | 121.39 (14) |
| O1—C5—C6 | 121.45 (13) | C15—C16—C17 | 120.98 (18) |
| O1—C5—C4 | 119.16 (13) | O2—C20—O3 | 122.15 (14) |
| C8—C9—N1 | 119.09 (13) | O2—C20—C8 | 123.13 (13) |
| C8—C9—C23 | 128.34 (14) | O3—C20—C8 | 114.71 (13) |
| N1—C9—C23 | 112.55 (13) | O3—C21—C22 | 107.31 (16) |
| C11—C10—C19 | 118.83 (14) |  |  |
| N1—C1—C2—C3 | 155.38 (13) | C1—N1—C9—C8 | −12.6 (2) |
| C1—C2—C3—C4 | 48.82 (17) | C1—N1—C9—C23 | 165.63 (14) |
| C3—C4—C5—O1 | −151.82 (14) | C21—O3—C20—O2 | −4.3 (2) |
| C25—C4—C5—O1 | 87.90 (17) | C21—O3—C20—C8 | 175.61 (16) |
| N1—C1—C6—C5 | −177.12 (13) | C9—C8—C20—O2 | −169.51 (15) |
| N1—C1—C6—C7 | 6.2 (2) | C7—C8—C20—O2 | 11.6 (2) |
| O1—C5—C6—C1 | 176.76 (14) | C9—C8—C20—O3 | 10.6 (2) |
| O1—C5—C6—C7 | −6.5 (2) | C7—C8—C20—O3 | −168.32 (13) |
| C20—C8—C9—N1 | 170.78 (13) | C20—O3—C21—C22 | −173.42 (18) |
| C7—C8—C9—N1 | −10.4 (2) |  |  |
| ---------------------------------------------------------------------------------------------------------------- |

[**Table 4.**](file:///C%3A%5CUsers%5CTosh%C4%B1ba%5CAppData%5CLocal%5CTemp%5Chu-ce1a%20_geom_hbond_atom_site_label_D%20tablenum) [Hydrogen-bond geometry (Å, °)](file:///C%3A%5CUsers%5CTosh%C4%B1ba%5CAppData%5CLocal%5CTemp%5Chu-ce1a%20_geom_hbond_atom_site_label_D)

|  |
| --- |
| ----------------------------------------------------------------------------------------------------------------- |
| D—H···A | D—H | H···A | D···A | D—H···A |
| ----------------------------------------------------------------------------------------------------------------- |
| C7—H7A···O2 | 0.98 | 2.45 | 2.8122(17) | 101.6 |
| N1—H1N···O1i | 0.83(2) | 1.99(2) | 2.8150(17) | 171.6(19) |
| C23—H23B···O1i | 0.96 | 2.52 | 3.346(2) | 143.7 |
| ----------------------------------------------------------------------------------------------------------------- |

Symmetry code: (i) −x+3/2, y+1/2, z.

**Table 5.** Maximum relaxant responses (Emax) and pD2 values of the compounds, nifedipine and DMSO on strips of rabbit gasric fundus smooth muscle.

|  |  |  |
| --- | --- | --- |
| **Compound**  | **Emax** | **pD2** |
| **1** \* |  81.20 ± 10.26 | 5.42 ± 0.71 |
| **2** \* |  82.78 ± 8.98 | 5.53 ± 0.65 |
| **3** \* |  77.42 ± 4.71 | 4.63 ± 0.37 |
| **4** \* |  45.52 ± 9.10 | 4.92 ± 0.66 |
| **5** \* |  53.32 ± 7.53 | 5.00 ± 0.57 |
| **6** \* |  93.54 ± 9.31 | 5.56 ± 0.67 |
| **7** \* |  91.83 ± 5.29 | 4.95 ± 0.42 |
| **8** \* |  43.17 ± 5.97 | 5.39 ± 0.47 |
| **9** \* |  63.93 ± 5.90 | 4.52 ± 0.47 |
| **10** \* |  42.30 ± 4.67 | 5.31 ± 0.37 |
| **11** \* |  50.42 ± 10.01 | 4.37 ± 0.70 |
| **12** \* |  36.88 ± 5.96 | 6.09 ± 0.47 |
| **13** \* |  48.90 ± 10.41 | 5.37 ± 0.71 |
| **14** \* |  92.68 ± 8.15 | 4.67 ± 0.61 |
| **15** \* |  91.50 ± 5.94 | 5.07 ± 0.47 |
| **16** \* |  21.94 ± 3.68 | 6.34 ± 0.26 |
| **Nifedipine** | 100.00 ± 2.18 | 8.33 ± 0.04 |
| **DMSO** | 11.35 ± 2.25 | 6.31 ± 0.05 |

Relaxation is expressed as a percentage of the precontraction induced by 2,5 mM Ca2+. The negative logarithm of the concentration for the half-maximal response (pD2) and Emax values represent mean value ± S.E.M.

\* p < 0.05 compared with control responces, n = 6