Synthesis of 3-[(4-{3-[2-oxo-1,2-dihydro-3H-indol-3-ylidem]amino[phenoxy][phenyl]imino]-1H-indol-2-one as a novel Schiff base

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Isatin is an endogenous compound isolated in 1988 [1] and reported to possess a wide range of central nervous system activities [2, 3]. Isatin is the biologically active chemical produced by an alteromones sp. strain inhabiting the surface of embryos of the cardinean shrimp palaemonmacrodectylus, which protects them from the pathogenic fungus lagenidium callinects [4]. Also isatin is the major MAO B (endogenous monoamine oxidase) inhibitory component of tribulin [5]. In some tissues and body fluids, isatin does account for the MAO B-inhibitory component, e.g. in cerebrospinal fluid. Schiff bases and Mannich bases of isatin were reported to possess antibacterial [6-8], antifungal [9-11], antiviral [12-14], anti HIV [15-17], antiprotozoal [18,19]. Another area of application of these Schiff bases is analytical chemistry where some of these compounds are used as ligand in complexometry topic [20]. In view of these facts we decided to synthesize a new Schiff base from isatin as potential biological and complexometric agent. It’s biological activities and analytical works are under study.

Isatin 1 (2.00 g, 13.6 mmol) and 3,4'-diaminodiphenyl ether 2 (1.36 g, 6.8 mmol) were dissolved in 35 mL of warm ethanol containing 0.45 mL of acetic acid. The reaction mixture was refluxed for 18 h and set aside. The resultant solid was filtered and washed with ethanol. The pure Schiff base 3 was obtained upon
recrystallization from ethanol (1.93 g, 91.5%).

Melting point: >260 °C

IR (KBr, cm⁻¹): 1620.0 (C=N); 1733.9 (C=O); 3028.0-3581.6 (N–H).

¹H-NMR (250MHz, DMSO): δ= 6.16-7.77 (Ar-H, m, 16H); 10.94; 11.04 (N-H, s, 1H).

¹³C-NMR (62.9 MHz, DMSO): δ= 111.28; 111.98; 112.93; 115.97; 117.36; 118.60; 122.30; 122.76; 123.46; 124.29; 124.47; 125.98; 130.10; 131.26; 132.76; 132.88; 135.11; 135.60; 147.51; 153.49; 154.00; 155.42; 163.67; 192.86.

MS (m/z): 458, 331, 330, 329, 302, 301, 286, 200, 194, 151, 150, 139, 133, 132, 128, 65, 54, 53, 52, 50, 44.

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References:

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