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STUDY OF NEW AZO-AZOMETHINE DERIVATIVES OF SULFANILAMIDE : SYNTHESIS, CHARACTERIZATION, SPECTROSCOPIC, ANTIMICROBIAL, ANTIOXIDANT AND ANTICANCER ACTIVITY

Hala Sabry Al-Atbi[1], Iqbal J. Al-Assadi[2], Bushra K. Al-Salami[3]* and Sanaa Qasem Badr[4]

[1,2,3]Department of Chemistry, College of Science, University of Basrah, Basrah, Iraq.
[4]Department of Natural Marine Science, College of Marine Science, University of Basrah, Basrah, Iraq.
*e-mail : aakm7789@gmail.com

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ABSTRACT : A complementary for previous study, series of azo-azomethine compounds (Sb6- Sb12) have been synthesized with magnificent yield by condensation reaction of 4-((3-formyl-4-hydroxy-5-methoxyphenyl)diazenyl) benzenesulfonamide and aniline derivatives. The new azo compound was prepared from sulfanilamide by converting it to diazonium salt followed by coupling reaction with 2-hydroxy-3-methoxybenzaldehyde in alkaline medium. The structures of synthesized azo and azo-azomethine compounds have been established based on their spectral data (FT-IR,1HNMR ,13CNMR)and elemental analysis (C, H, N). The purity of compound and evaluation of R_f value were determined by TLC. The antimicrobial activity of azo-azomethine compounds have been tested *in vitro* against bacteria (*Staphylococcus aureus*, *Escherichia coli* and *Klepsilia pneumonia*) and fungi (*Candida glabrata, Candida albicane* and *Aspergillus niger*) by agar diffusion method, to assess their inhibiting potential. Also, the antioxidant and anticancer efficiency of azo-azomethine compounds have been calculated.

Key words : Azo , azo-azo Schiff bases, azo dyes, sulfanilamide, aniline derivatives.

INTRODUCTION

Sulphonamides are the primary viable chemotherapeutic specialists utilized for bacterial disease in people. Since their disclosure, sulfonamides have been generally utilized for prophylaxis and treatment of bacterial contaminations in spite of the fact that they are bacteriostatic as opposed to bactericidal. Their worth lies in the capacity to back off or anticipate development in wounds or tainted organs without considerable harmfulness to ordinary tissues (Mansour, 2014).

Sulfanilamide and its derivatives have a wide scope of pharmacological exercises, for example, Oral hypoglycemic, antileprotic, antiepileptic, against hypertensive, antibacterial, antiprotozoal, anti-parasitic, antiretroviral, calming , utilized as diuretic. Additionally studies have demonstrated that Sulphonamides are likewise ready to obstruct cancerous cell (Sharaf El-Din, 2000; Ajeet *et al*, 2015).

Azo compounds are the biggest class of natural colors that firstly prepared in 1862 by Peter Griess. These compounds portrayed by the existence of the azo moiety (–N=N–) in their structure, conjugated with two aromatic or hetero aromatic frameworks. Due to their particular physico-chemical properties and biological activities, they have discovered flexible use in numerous practical application in pharmaceutical, cosmetic, food, coloring or material industry and analytical science. Azo compounds are notable for their therapeutic significance and perceived for their applications as antidiabetics, germicides, antifungal, calming, antineoplastics, antibacterial and antitumor (Patil and Nehete, 2015; Kareem and Salman, 2017).

Schiff base, a marvelous gathering of compounds otherwise called anils, imines or azomethines that contains azomethine group (C=N). This group in charge of the biological activity of Schiff bases since intramolecular hydrogen bonding with C=N nitrogen atoms of Schiff bases decides the properties of different molecular systems and acting a critical role in numerous biochemical systems (Pallikkavil *et al*, 2012; Sikarwar *et al*, 2016).

Schiff bases have a wide assortment of applications in various regions, for example biological chemistry, organic and inorganic science and bioinorganic science as normal non-enzymatic/enzymatic intermediates, coordination and supramolecular science as basic ligands in addition to biomedical applications and material sciences. Schiff bases have gotten noteworthiness in pharmaceutical field due to expansive scope of biological activities like antibacterial, antifungal, anti-HIV, mitigating,