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A Review on Sulpha Drugs (One of The First Microbial Inhibitors)

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ABSTRACT

Sulpha or sulphonamide is one of the first microbial inhibitors; a bacterial enzyme synthesises vitamin folic acid, discovered in 1930 by the German scientist Domagk. This discovery was made by the red dye known as prontosil. The latter was biologically inactive while proving the opposite in the body. Red dye was used to treat an infant (aged 10 months) with a deadly infection. The biological efficacy of the dye to reductive cleavage Azo-forming agent for sulfanilamide - the real responsible for biological activity. It should be noted that all sulfonamides are derived from sulfanilamide (Zubay and Parson, 1995). The latter is similar to aminobenzoic acid that bacteria need to build folic acid, so sulfa drugs are effective in inhibiting the action of bacteria (Talaro, 1996). Differences in the functional group (SO2NHR) R result in different physiological, chemical and pharmacological properties of these drugs (Lowe and Hirschrman, 1984). Compensation for the sulfuric nitrogen atom leads to the production of stronger sulfanilamide acid (Goth, 1981) and compensation with the -SO3H group instead of -SO2NH2 for sulfonamide leads to the elimination of biological efficacy (Wilson and Gisvold's, 1989). The sulfonamides that possess the freep-amino group show only effective against bacteria, which have compensation in the free amino group become effective only as compensation is removed within the body and this is why Prontosil is ineffective outside the body.

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INTRODUCTION

The interaction in the above explains why Prontosil dye is biologically effective within the body. In 1939, Domagk was awarded the Nobel Prize in medicine and physiology in recognition of his pioneering efforts. Between 1946 and 1935, more than 5,000 compounds were prepared with a formula similar to that of sulfanilamide (Caret and Joseph, 1997) (Carey, 1996). It should be noted that all sulfonamides are derived from sulfanilamide (Zubay and Parson, 1995). The latter is similar to aminobenzoic acid that bacteria need to build folic acid, so sulfa drugs are effective in inhibiting the action of bacteria (Talaro, 1996). Differences in the functional group (SO2NHR) R result in different physiological, chemical and pharmacological properties of these drugs (Lowe and Hirschrman, 1984). Compensation for the sulfuric nitrogen atom leads to the production of stronger sulfanilamide acid (Goth, 1981) and compensation with the -SO3H group instead of -SO2NH2 for sulfonamide leads to the elimination of biological efficacy (Wilson and Gisvold's, 1989). The sulfonamides that possess the free p-amino group show only efficacy against bacteria, which have compensation in the free amino group become effective only as compensation is removed within the body and this is why Prontosil is ineffective outside the body.

Which are distinguished greater potency and wider antibacterial spectrum (greater therapeutic index)? Most sulphonamides are present in the form of sodium salts which are moderately soluble

as they are used intravenous administration (Jwetz, 1990).

The solubility of these compounds increases as the pH function is greater than the pKa of the drug. High-base sulfonamide solutions are unstable and can be precipitated by adding Polyionic electrolytes, except sulfacetamide, where it is neutral and therefore used in eye treatment (Kumar, Clark and Jackson, 1987). And soluble sulfonamide molecules such as phthayl sulphathiazole Remain in the intestines cavity for a longer period (Katzung, 1992).

The sulfonamide drugs are effective against both gram-positive - bacteria and gram-negative – bacteria (Al-Grawi and Al-Awsi, 2018). As they are dyed purple (positive) and pink (negative) by the solution of a gram (Gram's solution) (Al-Thahab and Al-Awsi, 2018) (Abed, 2017). Thus it can be defined as an antiviral drug (Lateef *et al*., 2018), bacteriostatic and bactericidal if microorganisms grown in thymine medium, sulpha drugs have wide uses in medicine because they inhibit the effectiveness of many types of bacteria that cause tuberculosis and pneumonia and diphtheria and meningitis and blood poising and scarlet fever and tonsillitis (Shamran *et al*., 2018). Sulpha drugs were used to treat breast diseases (Ibraheen and Abed, 2017). In terms of veterinary medicine, sulfa has been widely used to cover wounds and prevent infection after surgery, pneumonia, uterine inflammation, inflammation of the intestines, joint diseases, rotting of the limbs and arthritis in small pigs. And should be given in full doses and otherwise lead to resistance by bacteria (Laurence and Bennett, 1992).

Sulfonamides were classified according to their absorption in the body to:

1. Good oral absorption and has an average half-life (t1 / 2) such as sulfamide (sulfamethazine) this drug is currently very rare because it is carcinogenic (Wilson *et al*., 1975).
2. 2.Good oral absorption and has a long half-life such as sulfametopirazine
3. Sufficient absorption such as calcium sulfate and oxalate
4. Silver sulphadiazine
5. Sulfasalazine
6. Sulfonamides associated with trimethoprim such as co-trimoxazole, a sulphamethoxazole and trimethoprim.

Sulfonamides were found to be decomposed by heating 10 g of them with 100 mL of HCl (25%). The sulfonamides containing an amine group were metabolized from 24 to 36 hours of escalation while sulphonamides containing a secondary amino group containing 10 to 12 hours for degradation Sulphonamides, which possess at least one hydrogen atom on a nitrogen atom, can be calcified by treatment with a base, halide, alkyl or alkyl sulfide (Stenesh, 1975).

METHODS

Estimation of sulpha drugs

Through the literature, many methods have been developed to estimate sulfa drugs in pharmaceuticals, blood, blood and animal meat, because sulfa drugs are of great importance as well as their extensive uses in the treatment of many diseases:

Titrations methods

The researchers Gopal and Pandle estimated (5 - 1) mg of a number of sulfa drugs such as sulfanilamide, sulfathiazole, sulfadiazine, sulfaguanidine and sulfacetamide in the acidic environment by correcting them with N - bromosuccinimide solution using the red instance guide. Pelizzetti and Pramanur were able to estimate a large number of sulfa drugs by correcting them with sodium hydroxide solution using phenolphthalein as a guide. In addition, hexadecyl pyridinium chloride was added to increase the acidity of the drug solution. The estimated amounts ranged from 120 to 20 mg of medicine. Girish and Andreasinan also evaluated some sulfa drugs using N-Bromo-phthalimide, N-Bromo saccharin and amaranth guide until the last colour change from red to colourless.

Trieff, Ramanujam, and Cantelli were able to estimate sulfa drugs by indirect modification by mixing sulfonamide solution with a known increase in T-chlorine for 4 hours and then adding potassium iodide and sulfuric acid to interact with non-reactant copiers and erasing iodised editor solution of sodium thiocriptate using starch as evidence.

Methods of weights

Yassa and Ismaiel were able to estimate sulfa and Zenia by oxidising the compound to sulfate by heating with copper acetate and sodium carbonate in the platinum plate at 850 ° C for 4 hours, then adding nitric acid and diluted hydrochloric acid and depositing sulfate ions in barium sulphate Which weighs and weighs. The error rate (% 3) was estimated at sulfadimidine.

Spectral and colour methods

The researcher Verma and his group were able to estimate the primary aromatic amines through their reactivity with N-4 methyl aminophenol and 2-iodo benzoate (oxidative agent). It is a pink product whose absorption is measured at a wavelength of 525 nm, and the reaction is followed by the PIR

code in concentrations of 32-4 µg / ML of amine solution. The method was used to estimate sulphamethoxazole in pharmaceutical preparations.

Mohamed also estimated the sulphonamides by their interaction with tetracyanoquino dimethane in acetonitrile and sodium acetate for 30 min and measured spectral output at a wavelength of 578 nm and found that the method followed the BER code for higher concentrations of the range (8 - 0.5) µg / ml with the coefficient of change> 2 and the percentage of recovery was (100.1 - 99).

Chromatographic methods

Weber and Samedley were able to estimate the remaining sulphonamides in beef at a concentration of 10 pb/l in liquid chromatography, which involves extraction of chloroform and acetone, evaporating the remaining organic layer and dissolving the remaining potassium phosphate solution, extracting the remaining fat into the hexane layer, Liquid chromatography The absorption of the output at the wavelength is measured at 256 nm, the recovery ratio is 87-44, and the deviation coefficient (13-3%) is at a concentration of (10)p/ b.

Researchers from Vinas, Campillo and Hernandezcordoba developed the derived fluorescent column method to determine the temporal estimate of the number of sulfonamides in food using liquid chromatography (LC), which included the interaction of sulfa drugs with ortho-phthalaldehyde and betamercaptoethanol. The method was applied in routine quality control analyses to ensure that there was no sulfonamide in food, the reaction rate was 95% and at 0.04, 0.1 and 0.5 µg / mL (AL-NASHI and Al-Aosi, 2013).

Fluorescent methods

Nakanishi was able to estimate sulphonamides by means of Schiff bases composed of 4-dimethylamine-benzaldehyde reaction and sulfonamide. The fluorine product was measured at a wavelength of 493 nm, and the calibration titer was linearly higher than 4 micro molars.

Polarography methods

Grossi and his group evaluated a number of sulfa drugs using alternating current polarography in the electrolytic environment of hydrochloric acid (0.05) (HClO4) molariate in dimethylformamide using a silver/silver chloride electrode as a reference, and the estimated quantities were about 10 mg/ml.

Sulaiman and his group studied the pulsed polynogravure behaviour of diazonium salts from seven sulfonamides. The study was conducted in Britton-Robinson at 1.5 = pH, and the values obtained at Ep = -0.16 V were used to estimate the number of sulfa drugs (Ghaidaa, 2012).

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