

SULFANILAMIDE PREPARATIONS

Anorboyev Qobiljon Xoliqberdiyevich

Assistant of the Department of Pharmaceutical Sciences, ASMI

Annotation: *This article describes sulfanilamide preparations, the history of the discovery of sulfanilic acid, its use, streptocide and its harmful and beneficial properties, as well as some derivatives of sulfanilic acid.*

Keywords: *sulfanilic acid, streptocide, substance, aniline, antibacterial effect.*

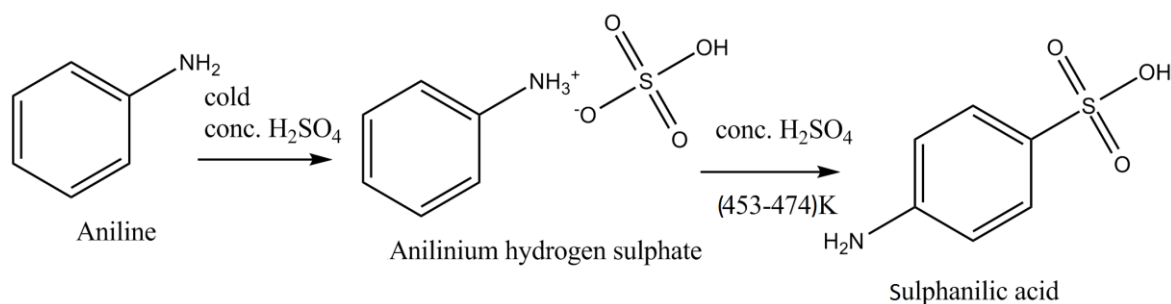
Аннотация: *В данной статье описаны сульфаниламидные препараты, история открытия сульфаниловой кислоты, ее применение, стрептоцид и его вредные и полезные свойства, а также некоторые производные сульфаниловой кислоты.*

Ключевые слова: *сульфаниловая кислота, стрептоцид, субстанция, анилин, антибактериальный эффект.*

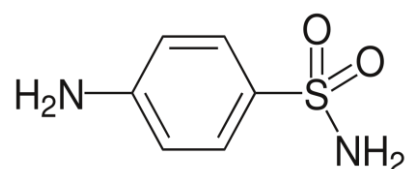
Sulfanilamide was first obtained in 1908 when trying to synthesize a good dye for textile materials, related to the well-known dye aniline. Twenty years later, on its basis, the azo dye prontosil was synthesized, in which a strong activity against streptococci was discovered.

The antibacterial effect of the substance was discovered by the German scientist Gerhard Domagk during the continuation of the research of Joseph Klarer and Fritz Mietzsch, which, in turn, was based on the work of Paul Ehrlich on the use of dyes (IG Farben's main product) as antibiotics.

Preparation: Sulfanilic acid is obtained from aniline; heating aniline sulfate $C_6H_5NH_2 \cdot H_2SO_4$ at 180–200°C. The best technical method for obtaining sulfanilic acid is heating aniline monosulfate for 8 hours at 180°C.



Getting (Streptocide). An aqueous solution of isopropyl alcohol with a percentage of 75-95% and technical sulfanilamide are loaded into the reactor, then the reaction mass is heated to a temperature of $75 \pm 10^\circ \text{C}$, maintained and stirred for 10-30 minutes, then the reaction mass moves through a filter into the crystallizer, where it is cooled to a temperature of $15 \pm 5^\circ \text{C}$, after which it is transferred to a centrifuge, squeezed out, dried at a temperature of $105 \pm 15^\circ \text{C}$ to a moisture content of not more than 0.5%.



Streptocide is an antimicrobial bacteriostatic agent. The mechanism of action is due to competitive antagonism with para-aminobenzoic acid (PABA) and inhibition of dihydropteroate synthetase, which leads to disruption of the synthesis of dihydrofolic and then tetrahydrofolic acid and, as a result, disruption of the synthesis of nucleic acids of microorganisms. Activity is shown against gram-positive and gram-negative microorganisms: *Escherichia coli*, *Shigella* spp., *Vibrio cholerae*, *Clostridium perfringens*, *Bacillus anthracis*, *Corynebacterium diphtheriae*, *Yersinia pestis*, *Chlamydia* spp., *Actinomyces israelii*, *Toxoplasma gondii*.

Side effects: Allergic reactions, headache, dizziness, nausea, vomiting, dyspepsia, cyanosis, leukopenia, agranulocytosis, crystalluria are possible.

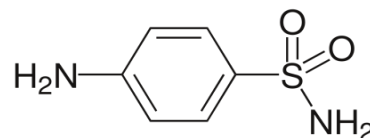
Contraindications: Hypersensitivity to sulfonamides, pregnancy, lactation. Diseases of the hematopoietic system, inhibition of bone marrow hematopoiesis, anemia, azotemia, thyrotoxicosis, chronic heart failure, renal failure, porphyria, liver failure, congenital deficiency of glucose-6-phosphate dehydrogenase.

We considered the properties of only streptocide, since in our area it is one of the most widely used drugs. At the same time, we also learned about the cases in which it can be used, and in which not; and also, looking at the negative actions, we learned that: when you need to see a doctor, if there are side effects after using it.

Below are the chemical structure formulas of some representatives of sulfonamide preparations.

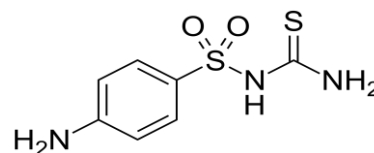
Sulfanilamide preparations

Streptocide (4-Aminobenzenesulfonamide)



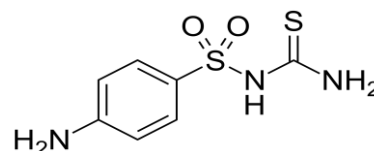
Sulfathiourea

(4-Aminophenylsulfonylthiourea)

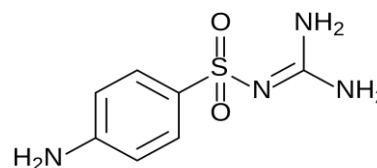


Mafenides

(4-(Aminomethyl)benzosulfonamide))



Sulfaguanidine (4-Amino-N-(diaminomethylene)benzenesulfonamide)



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