COMPOUNDS WITH ANTIMICROBIAL ACTIVITY AGAINST RESISTANT STRAINS OF STREPTOCOCCUS PNEUMONIAE AND OTHER GRAM-POSITIVE BACTERIA

DESCRIPTION OF THE INVENTION

Streptococcus pneumoniae (pneumococcus) is a pathogen responsible for serious infectious diseases such as pneumonia, sepsis and meningitis. This organism is one of the main causes of death from infectious diseases worldwide (more than 1.5 million deaths yearly), with special incidence on child and elderly population. The use of vaccines against pneumococcus provides insufficient protection due to the high number of different serotypes. Moreover, in recent years, there has been a marked increase in clinical strains resistant to traditional antibiotics used in pneumococcus treatment, which makes necessary the search for alternative treatments to combat this pathogen.

The researchers have described in previous studies the pneumococcal choline-binding proteins (CBPs) as targets for developing new therapeutic treatments against these resistant microorganisms.

The developed compounds are inhibitors of CBPs and exert a lethal effect on bacterial growth *in vitro,* both *S. pneumoniae* and other Gram-positive species (MRSA). These molecules represent an unprecedented chemical space not previously considered in the antimicrobial market.

BUSINESS FIELDS OF APPLICATION

Health and pharmaceutical sectors

TECHNICAL AND BUSINESS ADVANTAGES

These compounds act on novel therapeutic targets from which no resistance issues have been documented so far, and demonstrate antimicrobial effects on pneumococcus as well as other Gram-positive bacteria.

The compounds simultaneously inhibit a set of around 15 proteins, which are essential for pneumococcal viability and virulence, hampering the appearance of resistances.

They act on proteins that are present in all serotypes and strains of pneumococcus, so that these compounds might act as universal antipneumococcal drugs.

Instead of a single molecule, it is offered a family of structurally related compounds, from which design rules have been derived for the synthesis of derivatives with increased antimicrobial effect.

Besides the expected decrease in mortality in developing countries, these molecules may help to reduce costs associated to prolonged hospital days caused by antibiotic-resistance infections.

DEVELOPMENT STAGE OF THE TECHNOLOGY

Preclinical phase

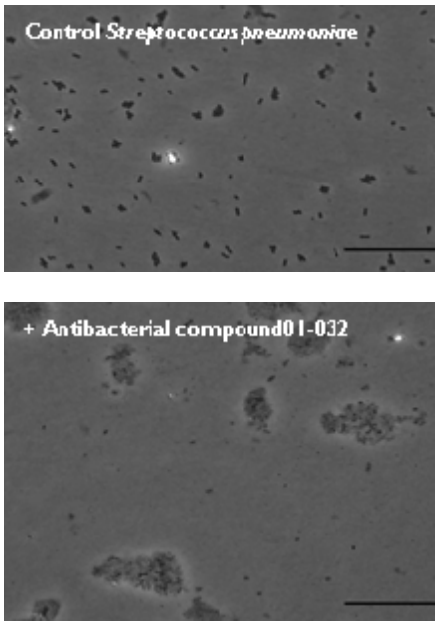
INDUSTRIAL PROPERTY RIGHTS

Protected by a patent in Spain. Universidad Miguel Hernández de Elche (70%) and Spanish National Research Council (CSIC) (30%) are co-owners of the patent rights.

TYPE OF COLLABORATION SEEKED

License agreement with companies wishing to market the technology

RELATED PICTURES



Streptococcus pneumoniae before and after treatment with one of the new compounds.

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