In vivo evaluation of antituberculotic activity of agents with efficacy against Mycobacterium tuberculosis

The Faculty of Pharmacy of Charles University

The Faculty of Pharmacy, with its seat in the town of Hradec Králové, was established in 1969. At the present time the Faculty ranks among the most significant scientific institutions in the Czech Republic.

The Hrabalek Group (http://portal.faf.cuni.cz/Groups/HrabalekGroup/) currently pursues research in potential antituberculosis agents based on substituted nitrogen heterocycles with extraordinary antituberculotic activity. Agents of this group are considerably active (up to 0.03 \( \mu \text{mol.l}^{-1} \)) in vitro, indicate very low toxicity in vitro and in vivo, genotoxicity and cytotoxicity.

The Group has all the resources necessary for reliable research, including monitoring of efficacy and toxicity in vivo. Monitoring takes place in the Central Military Health Institute, Centre of Biological Defence in Těchonín. It is a specialized medical institution equipped with vivarium and BSL 3/4 laboratories, intended for work with high-risk microorganisms. It has all necessary permissions for these activities: Permission for work with high risk microorganisms was issued by the State Office for Nuclear Safety. The permission for the use of laboratory animals was issued by the Ministry of Agriculture of the Czech Republic.

In cooperation with the Faculty of Pharmacy in Hradec Králové (Charles University in Prague), and the Centre of Biological Defence in Těchonín, the method entitled In vivo evaluation of antituberculotic activity of agents with efficacy against Mycobacterium tuberculosis – was developed and verified. In vivo tests using this method and the unique equipment are now available also for scientists from other scientific institutions as well as for scientists from development departments of private companies.

General description

Low molecular weight compound (LMWC) is administered per os in given dose to mouse standardly infected with M. tuberculosis H37Rv strain. The antitubercular effect of the LMWC is studied after one, two or three months of the administration. On the last day of the treatment period the number of M. tuberculosis colony forming units (CFU) in lungs and spleen are evaluated. The antituberculosis effect of studied LMWC is compared with untreated control and control treated with standard antituberculosis drugs (isoniazid, rifampicin or pyrazinamide) or their combination.

The experimental animals are BALB/c mice. The permission for the use of laboratory animals was given by the Ministry of Agriculture of the Czech Republic (Reg.No. 53093/2013-MZE-17214). All conditions under which animals are treated are in accordance with Act No. 246/1992 Coll., as amended.

We offer the above mentioned method for commercial testing of samples (this procedure will be secured by MTA agreement) and processing of the final report which involves:

- Number of M. tuberculosis CFU in lungs and spleen in LMWC-treated mice. The number of CFU in lungs and spleen of every mouse involved in this study group is reported.
- Number of M. tuberculosis CFU in lungs and spleen in isoniazid and/or rifampicin and/or pyrazinamide-treated mice. The number of CFU in lungs and spleen of every mouse involved in this study group is reported.
- Number of M. tuberculosis CFU in lungs and spleen in untreated mice. The number of CFU in lungs and spleen of every mouse involved in this study group is reported.

Cooperation offer

We would like to offer you the cooperation in form of contract research. We are able to prepare an offer exclusively for you and for your needs, according to your specific requirements. Please do not hesitate to contact us - please see our details here below.
Research team leader

- prof. PharmDr. Alexandr Hrabálek, Csc.

Additional information

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