Novel antibacterial compounds for the treatment of Tuberculosis and other bacterial infections

A Novel Cell Division Inhibitor with Efficacy against Mycobacterium tuberculosis

Background
Multidrug-resistant tuberculosis (MDR-TB) and extensively drug resistant TB (XDR-TB) are a significant public health threat for TB control efforts. Despite efforts in last 50 years, development of new TB treatments have been limited to drug targets like cell wall biosynthesis, ATP synthesis, RNA synthesis, leading to resistance in these areas. Hence, there is a need to discover novel drugs that target other bacterial processes in order to counter the developed bacterial resistance.

Technology
Dr. Iwao Ojima, Distinguished Professor of the Department of Chemistry at Stony Brook University and Director of the Institute of Chemical Biology and Drug Discovery, has focused his drug discovery program on the bacterial septum formation and cell division protein, FtsZ. Dr. Ojima and colleagues have developed novel trisubstituted benzimidazoles directed against FtsZ of M. tuberculosis H37Rv and the lead compound, SB-P17G-A20, shows efficacy in an acute mouse model of M. tuberculosis. Time-kill curves were performed and, metabolic stability and plasma stability were determined to assess the potential in vivo pharmacokinetics and pharmacological performance of SB-P17G-A20. Together, these studies demonstrate that SB-P17G-A20 has potency against M. tuberculosis clinical strains, and that trisubstituted benzimidazoles continue to be a platform for the development of novel inhibitors with efficacy.

Patent number/Publication:
• Issued patents: US (8,232,410), EU, Japan, South Africa, Mexico, Canada.

Advantages
• Novel mechanism of action
• Can be used in combination therapy

Applications
• Antibacterial, including Tuberculosis

Stage
• Animal data
• metabolic stability and plasma stability data
• Time kill curve

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