

Clinical Pharmacy-2013 : Mechanism of action of new immunobiological treatments for bronchial asthma - Christian Domingo - Autonomous University of Barcelona

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Asthma is a common chronic inflammatory disorder of the airways. It is clinically characterized by bronchial hyperresponsiveness (BHR), reversible airflow limitation and recurrent episodes of wheezing, shortness of breath, chest tightness, and cough. Asthma is in fact a complex syndrome with many clinical and inflammatory phenotypes. A great advancement in asthma treatment occurred in the first decade of the ongoing century with the advent of the so called biological treatments, that is those treatments that try to block the proteins or molecules originated in cells that in turn will trigger or modulate asthma cascade. When the purpose is to block intracellular proteins we call it anti-sense therapy since that attempt is made by the administration of molecules that are short, single-stranded nucleic acids complementary to target messenger RNA (mRNA), which bind to receptor mRNA with levels of affinity and avidity that can far surpass that shown by traditional drugs targeting protein receptors. When we plan to block blood circulating, cell or tissue mediators, we use the so called monoclonal antibodies (mAbs). mAbs represent a form of immunotherapy using passive immunity where preformed antibodies against a target antigen are injected into the body. Because of their specificity, mAbs can efficiently target an antigen on a cell of interest or in the serum and block the binding of cytokines, immunoglobulins, hormones or proteins that promote certain unwanted functions including inflammatory and immune responses. Ultimately, both methods can attenuate the expression of disease-associated genes. During this session the mechanisms of action as well as the most relevant mAbs already marketed or in advanced state of development for asthma treatment will be reviewed. Asthma is a typical long haul incendiary illness of the aviation routes of the lungs. It is portrayed by factor and repeating indications, reversible wind stream impediment, and effectively activated bronchospasms. Symptoms incorporate scenes of wheezing, hacking, chest snugness, and brevity of breath. These may happen a couple of times each day or a couple of times for every week. Depending on the individual, asthma side effects may turn out to be more regrettable around evening

time or with exercise. Asthma is believed to be brought about by a mix of hereditary and natural factors. Environmental elements incorporate introduction to air contamination and allergens. Other potential triggers incorporate prescriptions, for example, ibuprofen and beta blockers. Diagnosis is typically founded on the example of side effects, reaction to treatment after some time, and spirometry lung work testing. Asthma is arranged by the recurrence of indications, constrained expiratory volume in one second (FEV1), and pinnacle expiratory stream rate. It might likewise be named atopic or non-atopic, where atopy alludes to an inclination toward building up a sort 1 extreme touchiness reaction. There is no solution for asthma. Symptoms can be forestalled by keeping away from triggers, for example, allergens and aggravations, and by the utilization of breathed in corticosteroids. Long-acting beta agonists (LABA) or antileukotriene specialists might be utilized notwithstanding breathed in corticosteroids if asthma side effects remain uncontrolled. Treatment of quickly compounding indications is as a rule with a breathed in short-acting beta-2 agonist, for example, salbutamol and corticosteroids taken by mouth. In exceptionally serious cases, intravenous corticosteroids, magnesium sulfate, and hospitalization might be required. In 2015, 358 million individuals universally had asthma, up from 183 million in 1990. It caused around 397,100 passings in 2015, the vast majority of which happened in the creating world. Asthma regularly starts in childhood, and the rates have expanded altogether since the 1960s. In pharmacology, a medication is a synthetic substance, commonly of known structure, which, when managed to a living creature, delivers a natural effect. A pharmaceutical medication, likewise called a prescription or medication, is a concoction substance used to treat, fix, forestall, or analyze an ailment or to advance well-being. Traditionally tranquilizers were acquired through extraction from therapeutic plants, yet more as of late additionally by natural synthesis. Pharmaceutical medications might be utilized for a restricted term, or all the time for interminable disorders. Pharmaceutical medications are frequently

arranged into tranquilize classes—gatherings of related medications that have comparable substance structures, a similar instrument of activity (official to the equivalent organic objective), a related method of activity, and that are utilized to treat the equivalent disease. The Anatomical Therapeutic Chemical Classification System (ATC), the most broadly utilized medication characterization framework, doles out medications an exceptional ATC code, which is an alphanumeric code that allots it to explicit medication classes inside the ATC framework. Another significant arrangement framework is the Biopharmaceutics Classification System. This characterizes drugs as indicated by their solvency and porousness or retention properties. Psychoactive medications are synthetic substances that influence the capacity of the focal sensory system, adjusting observation, mind-set or consciousness.

Biography

Christian Domingo is Consultant of Pulmonary Medicine at the Hospital de Sabadell (Corporació Parc Taulí, Sabadell, Barcelona, Spain), Professor of Medicine at the Autonomous University of Barcelona, Professor of the Department of Anatomy and Physiology of the International University of Catalonia until 2010 and Professor of the Master in Health Economy of the University of Malaga. Dr. Christian

Domingo is also Advisor to the Gerson Lehrman Group and Genatics Group. He is a regular reviewer as well as member of the editorial board of international medical journals and the Editor-in-Chief of 'The Open Respiratory Medicine Journal'. Christian Domingo studied at the Lycée Français of Barcelona and later on received his Medical Degree (M.D.) from the Universitat Autònoma in Barcelona, Spain in 1984. After taking the national board, he was admitted in the Hospital Universitari Germans Trias i Pujol of Badalona (Barcelona) where he completed his Residency in Pulmonary Medicine from 1986-1989. He was also trained at the Cardio-Pulmonary Transplantation Unit of the Methodist Hospital in Houston, Texas (USA) and l'Unité de Soins Intensifs in Lyon (France). Later on, he worked as a staff member of the Intensive Care Unit at the Hospital Germans Trias i Pujol for three years, until 1992 when he became the staff member of the Pulmonary Service of the Corporació Parc Taulí. In addition to memberships and awards for his accomplishments in lung research, Dr. Christian Domingo has obtained more than 500,000 dollars in grants. He is also the director of several doctoral thesis of pulmonologists, internists and pediatricians and has published more than 90 papers. During the past 20 years his research has focused mainly in severe asthma and COPD, especially in new treatments.

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