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THE ORIGIN OF CATALYSIS: FROM ANCIENT TIMES TO GREEN CHEMISTRY

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ABSTRACT

Catalysis is a phenomenon known from very ancient times and plays a fundamental role in the manufacture of the vast majority of chemicals used by our society. Sustainability, in all its aspects, is the biggest challenge of the 21st century. The world is facing an unprecedented economic crisis, together with rising issues concerning the depletion of natural resources and the increasing global warming on the environment. Catalysis is an effective technology that plays an important role in preventing the pollution of our environment now and in the future. The gases CH₄, NO_x, CO, SO_x, N₂O, automotive exhaust gases, O₃, and CO₂ can be converted either to less harmful compounds or valuable products by catalytic conversions.

In this paper we trace the development of the concept and its explanation, from the dawn of its history until the first Nobel Prizes were awarded in 1909 and 1912 for significant contribution in the field. In 2010 the Nobel Prize in Chemistry was awarded jointly to Richard F. Heck, Ei-ichi Negishi and Akira Suzuki "for palladium-catalyzed cross couplings in organic synthesis.

ALZHEIMER'S DISEASE: NEW APPROACH OF REMEDIAL TREATMENT

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ABSTRACT

Alzheimer's disease (AD), a chronic neurodegenerative disease is acknowledged as the common form of dementia in the elderly population. Deposition of β -amyloid (A β), tau fibrillation followed by death of cholinergic neurons is most widely accepted pathophysiology of AD. Commonly prescribed drugs for AD are acetylcholinesterase (AChE) inhibitors, antioxidants, metal chelators, monoamine oxidase inhibitors, anti-inflammatory drugs, NMDA receptor inhibitors. New approach towards AD is Immunotherapy, gene therapy and stem cell therapy. Immunotherapy in AD covers two types of vaccination: active vaccination against Abeta42 in which patients receive injections of the antigen itself or passive vaccination in which patients receive injections of preformed antibodies against Abeta42. Gene therapy with nerve growth factor, glial derived neurotrophic factor, brain derived neurotrophic factor and neprilysin are used for the treatment of AD. Recent advances in stem cell research like induced pluripotent stem cell technology, has helped the transformation of such stem cell-derived neural cells into different types of neurons and glial cells in *in vivo*. These novel therapeutic strategies may serve as a future of the treatment of AD. However, it will take a long time to evaluate the therapeutic potential of such therapies.