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Crossroads of medicine and chemistry in the 20th century

Abstract

IN THE 20TH CENTURY an interaction between chemists and physicians was highly successful. Many researchers were graduated both in chemistry and medicine like Janusz Supniewski (1899–1964). His education enabled him to explore a role of acetaldehyde in the carbohydrate and lipid metabolism in diabetic dogs (1926), to synthesize the imidazole derivative with anti-histaminic action (1928), to discover pharmacological properties of nicotinamide (1936) or to synthesize an antimetabolite of the cholesterol biosynthetic cascade, that was endowed with anti-atherosclerotic properties (1959).

The Nobel Prize Laureates in medicine and physiology frequently were deeply rooted in chemistry. Albert Szent Györgyi (1937) discovered not only biological role of ascorbate and bioflavonoids but also the fumarate catalysis. Sir Hans Krebs (1953) discovered the citric acid cycle, and Fritz Lipmann (1953) acetyl-CoA. These findings contributed to elucidation of the mechanisms of generation and saving life energy. Sir John Vane (1982) himself by education a chemist, by inclination a pharmacologist discovered the mechanism of action of aspirin making it available for treatment of myocardial infarction. He also introduced a new group of drugs for treatment of hypertension and angiopathies (ACE-Inhibitors). Sir John was closely associated with British and American industrial chemists. The discoveries of Sir James Black (1988) of the histamine H₂ receptor antagonists and the β -adrenergic receptor antagonists saved lives of many patients with gastro-duodenal ulcers and cardio-vascular disease, respectively. Sir James was also associated with the industrial chemists. Robert Furchgott (1998) discovered a prototype of all life signaling molecules-nitric oxide radical (NO^{*}). A highly chemical finding for a pharmacologist. This discovery not only explained the mechanism of therapeutic action of nitroglycerine but also opened a new perspective for understanding of endothelial dysfunction in atherothrombosis and in diabetic angiopathies. No doubt, the 20th century was a successful period for collaboration of medicine with chemistry.

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