Looking Back on the Discovery of α-Bungarotoxin

C.C. Chang

Professor Emeritus, Department of Pharmacology, College of Medicine, National Taiwan University, Taipei, Taiwan

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α-Bungarotoxin · β-Bungarotoxin · Nicotinic acetylcholine receptors · Autodesensitization · Up- and downregulation · Acetylcholine, explosive release · Wedensky inhibition · Endplate potential run-down · Tubocurarine · Succinylcholine · Neostigmine

Abstract
This review is a personal narration by a retiring pharmacologist from Taiwan who looks back at his discovery of α-bungarotoxin from the historical perspective of Taiwan during the last 50 years, with accounts of his experiences and his efforts to overcome hardship. How the α-toxin was isolated and characterized as an irreversible specific nicotinic acetylcholine (ACh) receptor antagonist, and how it subsequently became a useful experimental probe are presented here. The dilemma of differentiating the actions of tubocurarine and α-bungarotoxin is analyzed. The author also outlines findings based on work done in his laboratory using α-bungarotoxin as a tool on particular aspects of synaptic transmission. These include presynaptic receptor for positive feedback of transmitter release, explosive release of ACh, up- and down-regulation of ACh receptors after chronic drug treatment, autodesensitization of junctional ACh receptors, differences in action between natural transmitter and exogenous agonists and that between junctional and extra-junctional ACh receptors. Some experimental pitfalls, in which biomedical scientists are frequently trapped, are raised. Finally, some anecdotes are appended from which the reader may further understand scientific life in the 20th century, including its joys and regrets.