

# Cationic Lipids: Synthesis and Its Applications for Gene and Natural Products Delivery

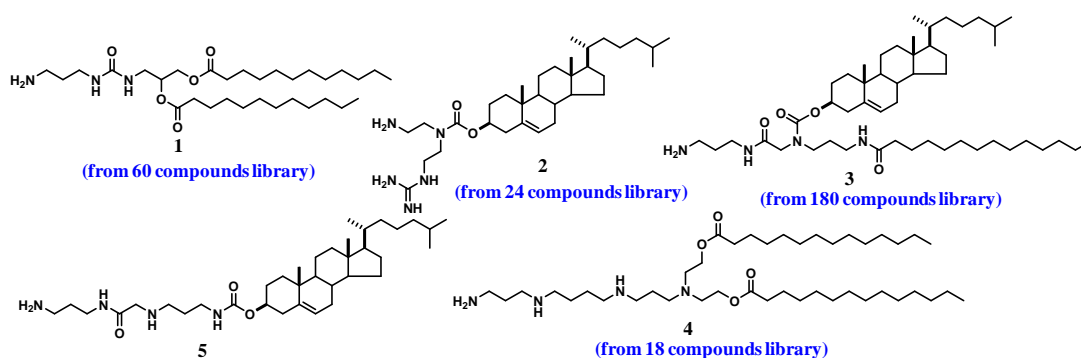
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The ability of non-viral gene delivery system to overcome extracellular and intracellular barriers is a critical issue for the future clinical applications of gene therapy. In recent years much effort has been focused on the development of a variety of DNA carriers, and cationic liposomes have become the most common non-viral gene delivery system. Since the first application of cationic lipids in DNA delivery, numerous cationic lipids have been synthesized. Over 100 clinical trials for gene delivery using cationic liposomes have been approved. Cationic liposomes have also been studied as

chemotherapeutic drugs carrier in the treatment of cancer. The cationic lipids are normally composed of three main parts, a cationic head, a hydrophobic tail and a linker that join hydrophilic head and hydrophobic tail. Base on the general structure of cationic lipid, libraries of cationic lipids have been designed and synthesized. The synthesized lipids were evaluated for their transfection efficiency. It was found that lipids **1-5** exhibited greater transfection efficiency than that of the commercial transfection reagents.



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