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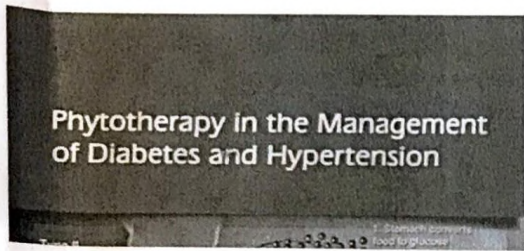
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## Chapter 4

Management of Diabetes Mellitus by Natural Products: Glucagon-like Peptide 1 Perspective

*Ojaskumar D. Agrawal and Yogesh A. Kulkarni*



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## CHAPTER 5

# Management of Diabetes Mellitus by Natural Products: Glucagon-like Peptide 1 Perspective

Ojaskumar D. Agrawal<sup>1,2</sup> and Yogesh A. Kulkarni<sup>1\*</sup>

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**Abstract:** Diabetes Mellitus (DM) has become a major and serious health problem worldwide. To overcome this lifestyle disease, natural products can be explored systematically. These natural products act on various targets and show their effect in diabetic conditions. Out of this, GLP-1 Receptor is one of the promising targets. Cells in the small intestine secrete Incretin hormones upon nutrient ingestion. Glucagon-like peptide-1 (GLP-1) is a primary incretin hormone in metabolism that has a potent antihyperglycemic effect. Insulin will release, in the presence of hyperglycemia, GLP-1 stimulates the pancreas to release insulin, stops glucagon release, gastric emptying slows down and increases satiety by acting on the hypothalamus. Storage of GLP-1 is mainly in secretory granules of L cells, in small intestinal distal portion and colon. When the cells are activated, this peptide is released into the main bloodstream. GLP-1 secreted mainly upon the ingestion of oral glucose or the ingestion of a mixed meal. Other factors like neurotransmitters and intestinal hormones also affect GLP-1 secretion from the intestine. Considering the above-mentioned parameters, regulation and control of GLP-1 are necessary as GLP-1 secretion is hampered in T2DM.

The present chapter focuses on scientific information about natural products specifically acting as GLP-1 Receptor Agonist (GLP-1 RA).

**Keywords:** Diabetes Mellitus, GLP-1 Receptor Agonist, Herbal Medicine, Insulinotropic, Natural Products.

## INTRODUCTION

The number of individuals suffering from diabetes has reached 425 million. International Diabetes Federation data shows that in 2045 there will be 629 million people affected with diabetes. At the global level, India is going to be one

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CHAPTER 26

ALCOHOL: NECESSARY EVIL OR POSITIVE GOOD

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ABSTRACT

Ethyl alcohol, or ethanol, is an intoxicating ingredient found in beer, wine, and liquor. Alcohol is produced by the fermentation of sugars and starches by yeasts. Historically and internationally, cultural visions of alcohol and its effect vary in terms of how positive or negative they are and the likely consequences that they attach to alcohol consumption. The dominant contemporary vision of alcohol in the united states is that alcohol(a) is primarily negative and has exclusively hazardous consequences, (b) leads frequently to uncontrollable behavior, and (c) is something that young people should be warned against. The consumption of alcohol plays an important social role in many cultures. Excessive use of alcohol can lead to the development of chronic diseases and some other serious problems like high blood pressure, heart disease, stroke, liver disease, digestive problems and cancer of the breast, mouth, throat, esophagus, liver, and colon.

Keywords: Alcohol, alcoholism, health, drink, economy, consumption

1.0 INTRODUCTION

Alcohol is a central nervous system depressant that is rapidly absorbed from the stomach and small intestine into the bloodstream. Alcohol is metabolized in the liver by enzymes. However, the liver can only metabolize a small amount of alcohol at a time, leaving the excess alcohol to circulate throughout the body. The intensity of the effect of alcohol on the body is directly related to the amount consumed. The consequences of this vision are that when children do drink (which teenagers regularly do), they know of no alternative but exclusive, intense consumption patterns, leading them frequently to drink to intoxication.

Here we explore alternative models of drinking and channels for conveying them which emphasize healthy versus unhealthy consumption patterns as well as the individual's



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Chapter

PRODUCTION AND PROCESSING OF HERBAL  
MEDICINES - AN INNOVATIVE EFFORT TOWARDS  
SUSTAINABLE DEVELOPMENT

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**Abstract** - The importance of research in the field of medicinal plants is felt more than ever. Some medicinal plants are the sources of adjuvant therapy in the health systems worldwide, not only to treat diseases but also to prevent them and maintain health. Despite the extensive experiences in use of medicinal plants in traditional medicine, scientific study and identification of active plant compounds and their effects can lead to the discovery of new therapeutic benefits and the production of nature-based products in the future. To achieve this purpose, extensive research is fundamentally important to control the quality of raw drugs and the formulation to justify their use in the modern medicine system; subsequently, animal studies and clinical trials are required to use the benefits of these plants. In addition, in the development of medicine from medicinal plants, among other things, a practical plan should be developed to preserve these resources.

**Keywords** - Medicinal plants, Chromatography

**INTRODUCTION**

Over the past three decades, there has been a constant, and at times, exponential growth in global interest in the use of herbal medicines. This increase in popularity and usage of herbal medicines is evident in the global market. Herbal medicines, including finished herbal products and the starting materials for their production, such as medicinal plants, herbal materials, herbal preparations and herbal dosage forms, are moving into international commerce and global trade, which reflects their increased economic value and importance.

Correct identification of source plant species and the selection of appropriate parts for use in herbal medicines are basic and essential steps for ensuring safety, quality and efficacy of herbal medicines. Hence, the safety and quality of herbal medicines at every stage of the production process have become a major concern to health authorities, health care providers, the herbal industries and the public. The safety and efficacy of herbal medicines largely depend on their quality. Unlike pharmaceutical products formulated from single-molecule chemicals produced synthetically or by isolation from natural source materials employing reproducible methods, herbal medicines consist of simple processed herbs or finished herbal products prepared from source materials containing a multiplicity of chemical constituents, the quality and quantity of which vary from batch to batch due to intrinsic and extrinsic factors.

**SCOPE**

Herbal processing encompasses the unique procedures of preparing herbal materials and herbal preparations, and it may be extended to the production of finished herbal products, with the ultimate goal of assuring herbal medicines quality. Thus, within the context of quality assurance and control of herbal medicines, the WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants



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## A Mini Guide LC-MS and GC-MS Techniques: A Tool for Phytoconstituents Evaluation of Plant Extracts

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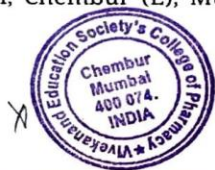
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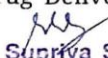
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Synopsis

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alkaloids, tannins, hormones, saponins, proteins, triterpenoids, flavonoids, phenylpropanoids, and reducing sugars. The chapter covers thirty-five components such as Styrene, D-glycero-D-manno-, Mesitylene, Z,Z-2,5-Pentadecadien-1-ol, Pterin-6-carboxylic acid, L- $\alpha$ -Terpineol, Cyclodecanol, (-)-Carvone, 2-Myristoyl pantetheine, Cubedol, Benzophenone, Palmitic acid, 9-Octadecanoic acid(Z), Stearic acid etc. These chapters would further help students and researchers to get proper insight to the important phytoconstituents present in various plants.

First edition of this book entitled as Guide to Phytochemical evaluation by LC-MS and GC-MS techniques focuses on basics and plant related examples of two well versed hyphenated chromatographic systems. With this edition, the opportunity has been taken to provide the interested readers and learners a useful guide to bridge the basic understanding and help to solve their practical problems. Some errors in this first edition of the book has been corrected, but others may remain and authors welcome the suggestions to improve on it.

As with first edition, the authors has been considerably motivated, seeked each other's guidance and help and guidance throughout the course of this book. The main corresponding author like to thank his co-authors and his post graduate students who worked to grass route level in development of the techniques and chapters covered in this edition of the book.

#### Chapter 1

##### **A Mini Review on Liquid Chromatography - Mass Chromatography and Their Applications**

Ami P. Thakkar, Hemen S. Ved, Gaurav M. Doshi, Atul P. Sherje

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Nirmal Shah *Editor*

# Nanocarriers: Drug Delivery System

An Evidence Based Approach

 Springer



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# Leveraging Nanotechnology in Cosmeceuticals: Formulation, Characterisation, Regulatory Status and Toxicity

17

Pranav Shah, Jaimini Gandhi, Yashwini Kansara, Kalyani Barve,  
and Shweta Gupta

## Abstract

The Federal Food Drug, and Cosmetic Act 2018 clearly defines the terms “drugs” and “cosmetics”. Surprisingly, “cosmeceuticals” do not find any mention under this Act. The cosmetic industry commonly uses this word to refer cosmetic products that have medicinal or drug-like benefits. Cosmeceuticals are the fastest growing segment of the personal care industry. A new generation of cosmeceuticals containing more efficacious and stable active ingredients incorporated into versatile nanocarriers like liposomes, nanoparticles, buckyballs, nanoemulsions, dendrimers, fullerenes, microgels, nanogels, nanocrystals, nanogold and nanosilver have come into existence. They have been termed as “nanocosmeceuticals”. A wide range of nanocosmeceuticals are presently available as antiaging products, skin cleansers, moisturisers and haircare products as colour cosmetics. There are more than 20 nanocosmeceutical based products commercially available and hundreds of patents pertaining to nanocosmeceuticals. Nanocosmeceuticals exhibit improved activity because of better entrapment efficiency, enhanced skin penetration, and retention leading to prolonged release of active ingredients. In spite of their fascinating and innumerable advantages, they have lot of safety concerns which should never be

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CHAPTER

# Biomedical application of graphenes

# 12

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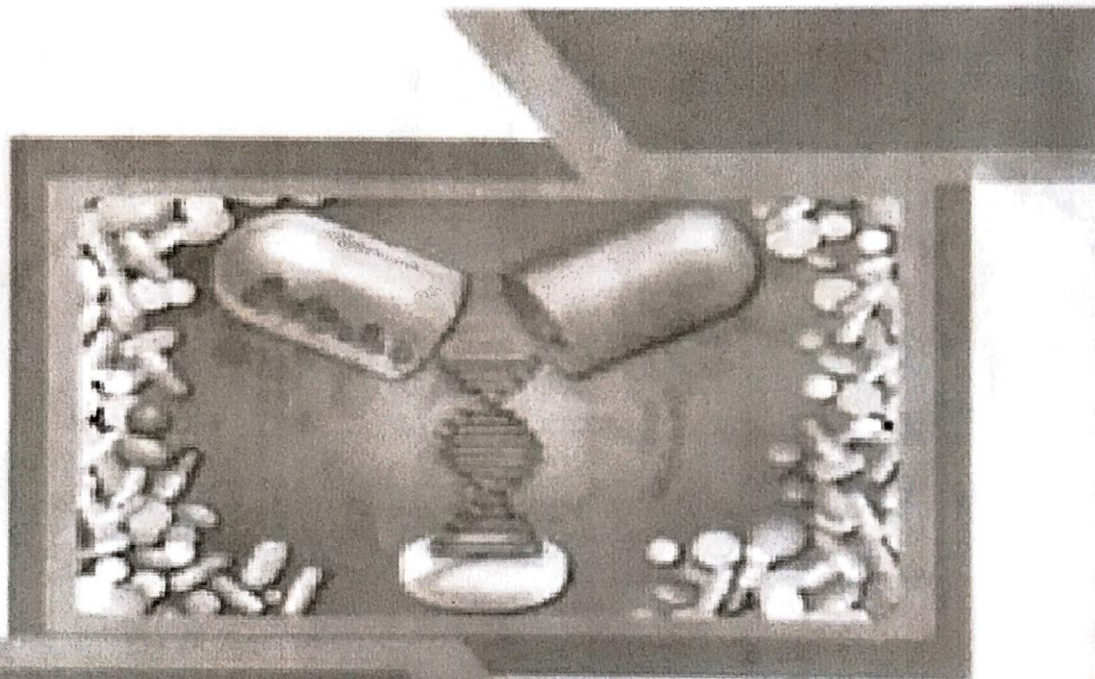
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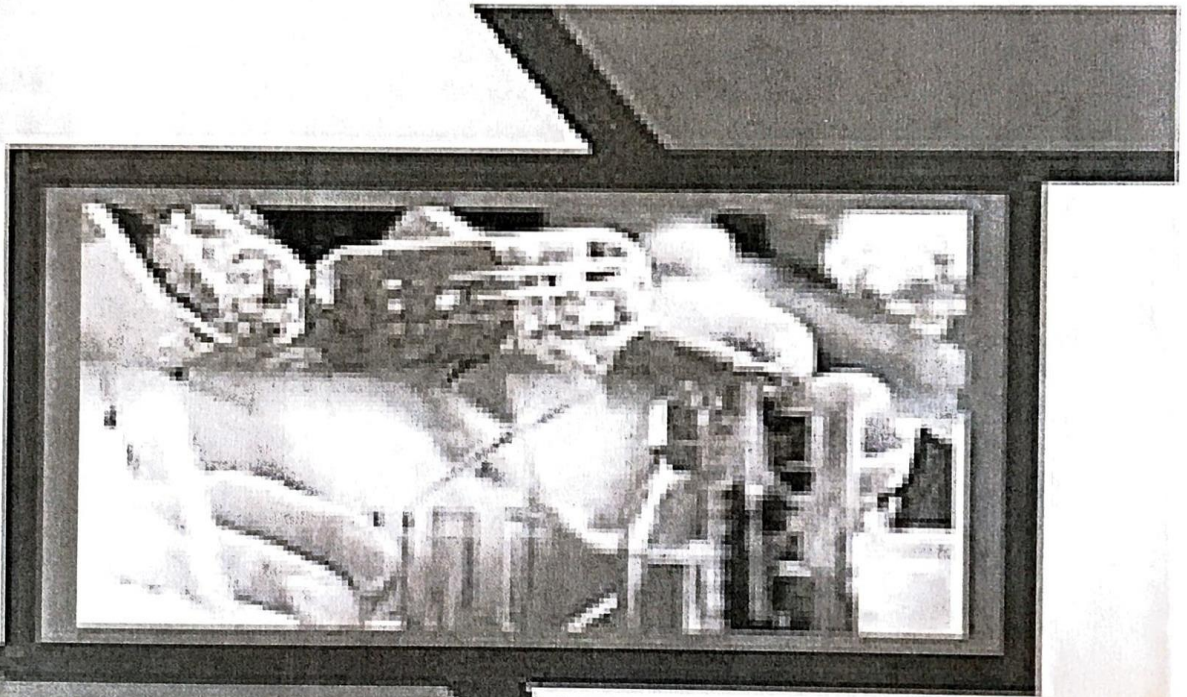
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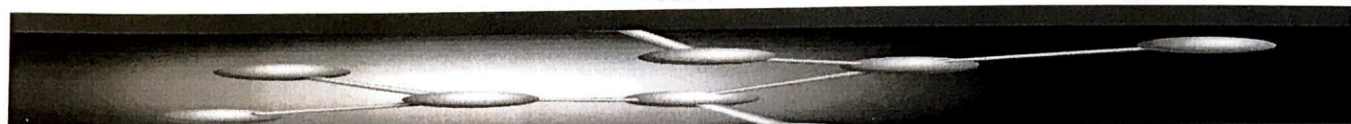
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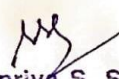
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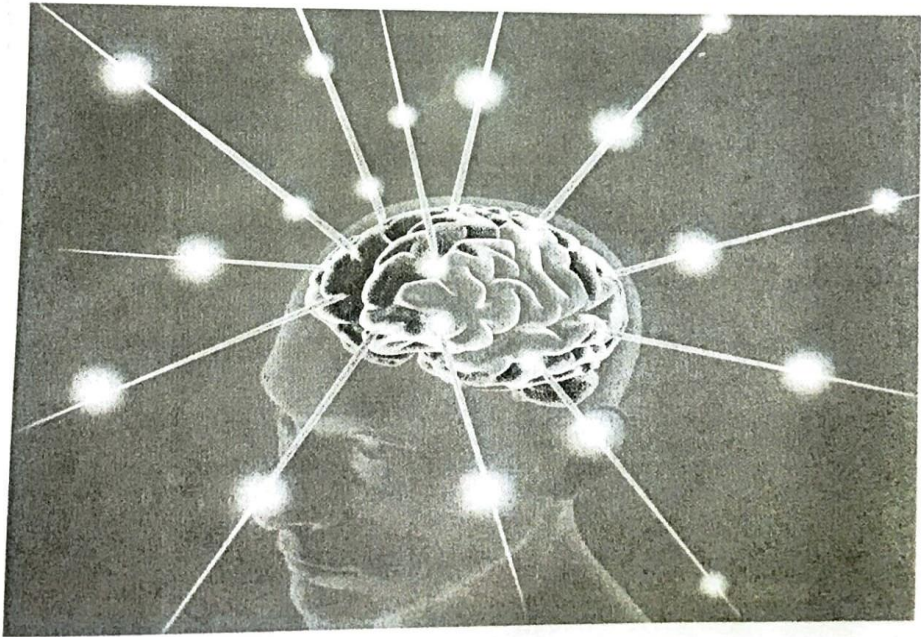


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