



Available online at  
**ScienceDirect**  
[www.sciencedirect.com](http://www.sciencedirect.com)

Elsevier Masson France  
**EM|consulte**  
[www.em-consulte.com/en](http://www.em-consulte.com/en)



## Review

# The role of dietary polyphenols in the management of erectile dysfunction–Mechanisms of action



Chinedum Eleazu<sup>a,\*</sup>, Nwite Obianuju<sup>a</sup>, Kate Eleazu<sup>b</sup>, Winner Kalu<sup>c</sup>

<sup>a</sup> Federal University, Ndifu-Alike, Ikwo, Ebonyi State, Nigeria

<sup>b</sup> Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

<sup>c</sup> Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria

## ARTICLE INFO

### Article history:

Received 5 January 2017

Received in revised form 20 January 2017

Accepted 20 January 2017

### Keywords:

Erectile dysfunction

Polyphenols

Nutrition

Antioxidants

Nutraceuticals

## ABSTRACT

The incidence of erectile dysfunction (ED) is on the increase and it is estimated that it will affect about 322 million men globally by the year 2025 if adequate measures are not taken to curb it. Natural polyphenols in plant based diets have gained public interest in recent times due to their roles in the prevention of various disease that implicate free radicals/reactive oxygen species and recently on ED. However, the role of polyphenols in the management of ED has not been explored due perhaps to limited data available. Hence this study which reviewed the role of dietary polyphenols in the management of ED and their mechanisms of action. Literature search was carried out in several electronic data bases such as Pubmed, Google Scholar, Medline, Agora and Hinari from 1972 to 2016 to identify the current status of knowledge on the role of polyphenols in the management of erectile dysfunction. Progress made so far in this direction suggests inhibition of arginase, acetylcholinesterase, angiotensin converting enzyme, rho-kinase II; activation of endothelial and neuronal NO synthase; decreased synthesis of luteinizing hormone and testosterone reduction; activation of silent information regulator 2-related enzymes (sirtuin1) as well as free radical/reactive oxygen species inhibition as the mechanisms through which the polyphenols identified in this review exert beneficial roles in the management of ED.

© 2017 Elsevier Masson SAS. All rights reserved.

## Contents

1. Introduction	645
1.1. Methods	646
2. Overview of polyphenols	646
2.1. Classification of polyphenols and their dietary sources	646
2.2. Pharmacokinetics of polyphenols	646
2.3. Metabolism and absorption of polyphenols	646
2.4. Bioavailability of polyphenols	647
2.5. Excretion/elimination of polyphenols	647
2.6. Polyphenols and oxidative stress	647
3. Biochemistry of penile erection	648
3.1. Etiology of erectile dysfunction	649
3.2. Erectile dysfunction and oxidative stress	649
4. Management of erectile dysfunction with dietary polyphenols	649
5. Effect of polyphenols on the efficacy of other medicines	650
6. Conclusion	650
References	650

\* Corresponding author.

E-mail address: [eleazon@yahoo.com](mailto:eleazon@yahoo.com) (C. Eleazu).

## 1. Introduction

Erectile dysfunction (ED) is defined as the inability to achieve or maintain an erection sufficient for satisfactory sexual performance [1]. Erectile dysfunction has been reported to affect more than 150 million males throughout the world [2] and it has been estimated that it will affect about 322 million men globally by the year 2025 [3] if adequate measures are not taken to curb it.

Although phosphodiesterase 5-inhibitors such as: sildenafil, tadalafil and vardenafil have been useful in the treatment of ED, the

adverse side-effects associated with their usage, their costs as well as drug interactions underscores the need for alternative measures [2].

The process of penile erection is multifactorial as it depends on a balance between psychological, hormonal, neurological, vascular, and cavernosal factors. Therefore, an alteration in any one or a combination of these factors may lead to ED [4].

Despite the multifactorial nature of ED, there are indications that reactive oxygen species (ROS)/free radicals may be connected to it. It has been suggested that accumulation of endogenous nitric

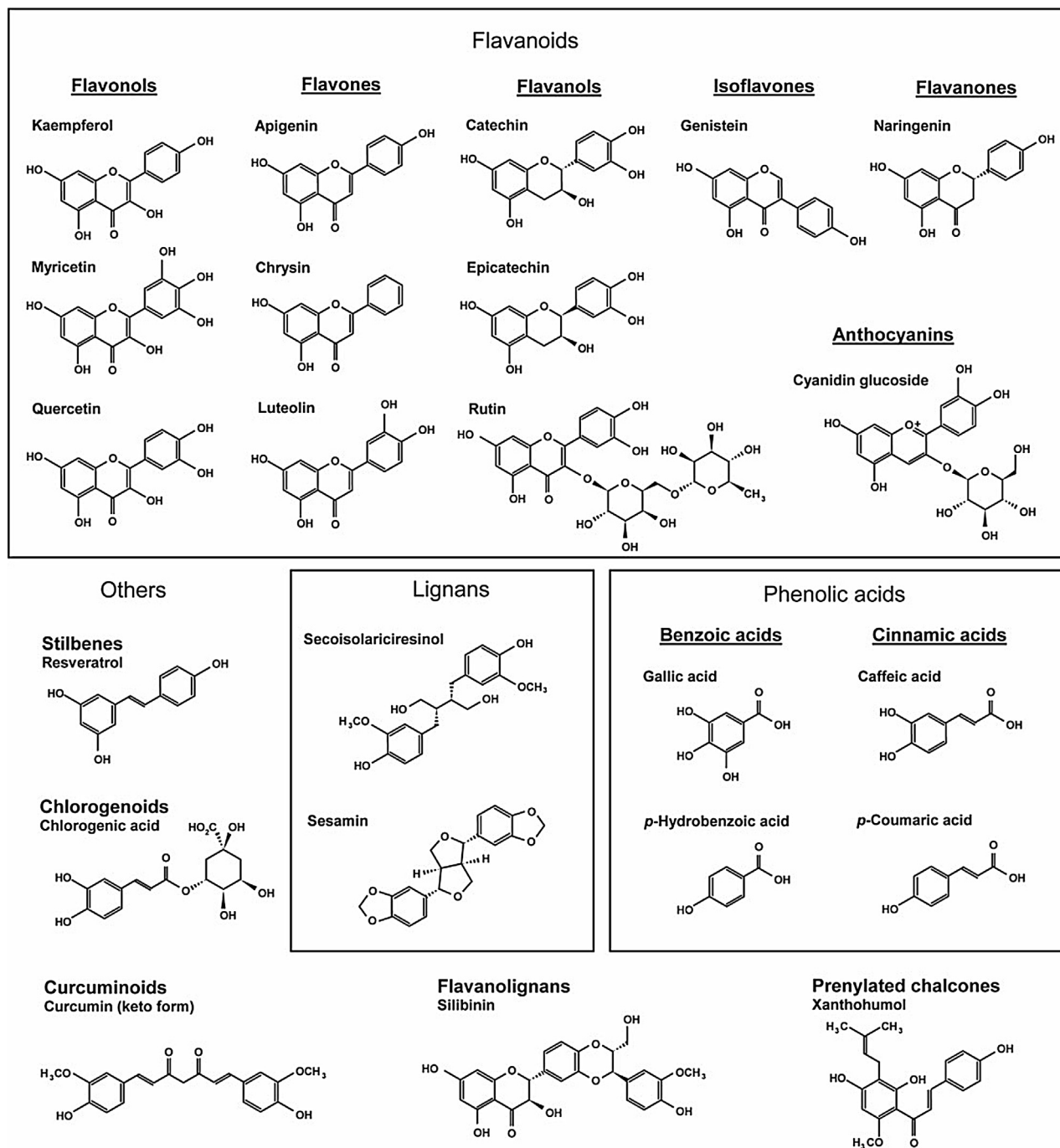


Fig. 1. Chemical structures of different polyphenols.

Download English Version:

<https://daneshyari.com/en/article/5553110>

Download Persian Version:

<https://daneshyari.com/article/5553110>

[Daneshyari.com](https://daneshyari.com)