

Chapter 6

Evaluation of Extracts From the Leaves and Pods of the Carob Tree (*Ceratonia siliqua* L.) as a Food With a Therapeutic Effect

Yassine Mouniane

 <https://orcid.org/0000-0002-6037-5301>

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Soumaya Choukri

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Soukaina Elkadaoui

*Faculty of Sciences and Technologies,
Cadi Ayyad University, Morocco*

Issam El-Khadir


 <https://orcid.org/0000-0002-3970-2865>

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Ahmed Chriqui

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Abdelaati Soufiani

 <https://orcid.org/0000-0002-5164-7707>

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Sara Razzak

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Hiba Benchehida

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Mariame Taibi

 <https://orcid.org/0000-0003-2137-8566>


*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Rida Arabi

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

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Fatima Kazbekovna Serebryanaya

 <https://orcid.org/0000-0001-9409-9344>

*Pyatigorsk Medical and
Pharmaceutical Institute, Russia*


Ilham Zenouaki

*Institut National d'Hygiène du Maroc,
Morocco*

Mohamed El Bakkali


*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

Mohamed Rektouti

 <https://orcid.org/0009-0004-5560-4925>


*Faculty of Science, Biology and Health
Laboratory, Ibn Tofail University,
Kenitra, Morocco*

Taoufiq Benali

 <https://orcid.org/0000-0001-5732-2818>

*Environment and Health, Cadi Ayyad
University, Morocco*

Driss Hmouni

 <https://orcid.org/0000-0001-7598-6204>

*Faculty of Sciences, Ibn Tofail
University, Kenitra, Morocco*

ABSTRACT

*The rising prevalence of chronic diseases and antibiotic-resistant bacteria underscores the need for natural remedies as sustainable, side-effect-free alternatives. This study highlights the therapeutic potential of carob, a plant rich in bioactive compounds with remarkable health benefits. Aqueous extracts from its leaves and pods contain significant levels of polyphenols (9.2 ± 0.31 to 8.53 ± 0.32 mg GAE/g), flavonoids (up to 3.34 ± 0.14 mg QE/g), and tannins (4.34 ± 0.32 to 0.39 ± 0.06 mg EC/g), contributing to its strong antioxidant properties. Furthermore, carob extract exhibited potent antibacterial activity, with inhibition zones measuring 8.2 ± 0.5 mm for *Salmonella* spp., 8.4 ± 0.6 mm for *Staphylococcus aureus*, 9.5 ± 0.5 mm for *Escherichia coli*, and 8.8 ± 0.6 mm for *Bacillus cereus*. These bioactive compounds support gut health by acting as antioxidants and microbiome regulators, preventing inflammatory bowel diseases and promoting intestinal balance. This study highlights carob's role in chronic disease prevention, advocating for a holistic health approach.*

1. INTRODUCTION

Currently, the incidence of metabolic disorders such as inflammatory bowel disease, obesity and metabolic syndrome have increased in recent decades (Adolph et al., 2024; Shen et al., 2024). Food safety, control of the obesity epidemic, and consumer awareness are a top priority for the WHO (Kuboka et al., 2024). This encourages companies to invest in research and development of new natural ingredients in order to create products that meet consumer demand with a positive effect on human health (Granato et al. 2020; Dey and Nagababu 2022; Yu and Watson

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