

Brought to you by [INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA](#)

Scopus

[Back](#)

The Spectrum of Natural Pigments: Diversity, Industrial Applications, and Future Prospects

Natural Pigments: Sources, Properties, and Health Benefits • Book Chapter • 2026

Latiff, Nur Hanie Mohd^a ; Othman, Rashidi^b

^aInternational Institute for Halal Research and Training, International Islamic University Malaysia, Kuala Lumpur, Malaysia

[Show all information](#)

This document is one of the chapters of a book series. [See all chapters](#)

0

Citations

[Full text](#) [Export](#) [Save to list](#)

[Document](#)[Impact](#)[Cited by \(0\)](#)[References \(97\)](#)[Similar documents](#)

Abstract

Natural pigments are vast and multifaceted, promising significant advancements in various industries, including food, pharmaceuticals, textiles, and environmental sustainability. These pigments encompass a wide array of compounds derived from botanical, animal, and mineral sources. They offer a safer and more sustainable option, imbuing artworks, textiles, cosmetics, and other goods with a unique character and depth originating from nature's palette. Plant-based pigments, such as chlorophylls, carotenoids, and anthocyanins, showcase colours ranging from green to red. In contrast, animal-derived pigments like cochineal extract yield unique red and purple shades. Mineral pigments like iron oxides contribute earthy tones suitable for various applications. Continuous research and innovation suggest that natural pigments are poised to play a significant role in the future of colouration and material science, offering a renewable and environmentally friendly solution to meet evolving consumer needs. There is a noticeable shift toward natural

additives over synthetic alternatives in consumer choices, prompting the food industry to anticipate a considerable move towards plant-based pigments. This transition is bolstered by continued research to enhance the stability and intensity of these pigments. Additionally, marine natural pigments and bacterial pigments show promising therapeutic applications, offering biocompatibility, bioavailability, and environmentally friendly solutions. Thus, the future potential of natural pigments lies in their ability to meet the demands of various industries for sustainable, safe, and bioactive colourants. Continuous research and technological advancements pave the way for their expanded use, enhancing stability, colour range, and application across industries. Copyright © 2026 by Nova Science Publishers, Inc.

Author keywords

bioactive colourant; colour range; enhancing stability; natural pigments

Indexed keywords

Engineering controlled terms

Animals; Biochemistry; Carotenoids; Food additives; Iron oxides; Marine applications; Sustainable development; Textile industry; Textiles

Engineering uncontrolled terms

Application prospect; Bioactive colorant; Bioactives; Color ranges; Enhancing stability; Environmental sustainability; Extract yields; Future prospects; Natural pigment; Spectra's

Engineering main heading

Biocompatibility

Corresponding authors

Corresponding
author

N.H.M. Latiff

Affiliation

International Institute for Halal Research and Training, International
Islamic University Malaysia, Kuala Lumpur, Malaysia

Email address

nurhanietatiff@iium.edu.my