English **## Products**

Web of Science[™]

Smart Search

Advanced Sear

Sign In ~

Register

Smart Search > Results for Natural chromo... >

Natural chromones targeting autophagy signalling pathways as potential a...

Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review

By

Shamsudin, NF (Shamsudin, Nur Farisya) ^[1]; Nawi, ARM (Nawi, Amira Rusyda Mat) ^[1]; Jantan, I (Jantan, Ibrahim) ^[2], ^[3]; Salim, E (Salim, Emil) ^[3]; Abdullah, MA (Abdullah, Maryam Aisyah) ^[1]; Chia, SL (Chia, Suet Lin) ^[4]; Saad, N (Saad, Norazalina) ^[4]; Imran, S (Imran, Syahrul) ^[5]; Leong, SW (Leong, Sze-Wei) ^[6]; Nainu, F (Nainu, Firzan) ^[7], ^[8]; Syahputra, H (Syahputra, Hafid) ^[9]; Syafri, S (Syafri, Suryati) ^[10]; Rullah, K (Rullah, Kamal) ^[1] ...Less

View Web of Science ResearcherID and ORCID (provided by Clarivate)

Source

RESULTS IN CHEMISTRY

← View Journal Impact

Volume: 17

DOI: 10.1016/j.rechem.2025.102601

Article Number 102601

Published SEP 2025

Early Access AUG 2025

Indexed 2025-10-05

Document Type Review

Abstract

Chromones, a class of natural product-based compounds, have garnered considerable interest due to their potential anticancer properties, particularly through the modulation of autophagy.

Autophagy is a cellular process involved in both cancer progression

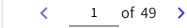






5

Export V Add To Marked List



flavones, flavone glycosides, and flavones, providing a robust dataset for evaluating the role of chromones in autophagy modulation. Most compounds activated autophagy, leading to cancer cell death, while a minority triggered autophagic activation with cytoprotective effects. Mechanistically, these compounds primarily inhibited the PI3K/AKT/mTOR pathway, a key regulator of autophagy initiation. This inhibition resulted in increased expression of LC3-II and Beclin-1, which are involved in autophagosome formation, and a decrease in p62 levels, a marker of autophagic degradation. Although the findings demonstrate a strong link between natural chromones and autophagy activation, none of the compounds were found to inhibit autophagy as a means to promote cancer cell death. This strategy, however, has been reported for synthetic derivatives. These results highlight the potential of chromones as anticancer agents and support future research into designing analogues that can selectively activate or inhibit autophagy depending on therapeutic needs.

Keywords

Author Keywords: Phytochemicals; Chromone-based compounds; Anticancer; Autophagy; PI3K/AKT/mTOR pathway

Keywords Plus: CELL-CYCLE ARREST; HEPATOCELLULAR-CARCINOMA CELLS; BREAST-CANCER CELLS; IN-VITRO; LUNG-CANCER; DOWN-REGULATION; ENDOPLASMIC-RETICULUM; DEPENDENT

AUTOPHAGY; PRIVILEGED SCAFFOLD; MEDIATED APOPTOSIS

Author Information Corresponding Address: Rullah, Kamal (corresponding author)

Int Islamic Univ Malaysia IIUM, Kulliyyah Pharm, Dept Pharmaceut Chem, Jalan Istana, Kuantan 25200, Pahang, Malaysia Corresponding Address: Salim, Emil (corresponding author)

Univ Sumatera Utara, Fac Pharm, Dept Pharmacol & Clin Community Pharm, Medan 20155, North Sumatera, Indonesia E-mail Addresses:

kamalrullah@iium.edu.my; emilsalim@usu.ac.id

Addresses:

- ¹ Int Islamic Univ Malaysia IIUM, Kulliyyah Pharm, Dept Pharmaceut Chem, Jalan Istana, Kuantan 25200, Pahang, Malaysia
- ² Univ Kebangsaan Malaysia, Inst Syst Biol, Bangi 43600, Malaysia
- ³ Univ Sumatera Utara, Fac Pharm, Dept Pharmacol & Clin Community Pharm, Medan 20155, North Sumatera, Indonesia
- ⁴ Univ Putra Malaysia UPM, Inst Biosci, UPM MAKNA Canc Res Lab, Serdang 43400, Selangor, Malaysia
- ⁵ Univ Teknol MARA UiTM, Atta Ur Rahman Inst Nat Prod Discovery AuRIns, Puncak Alam Campus, Bandar Puncak Alam 42300, Selangor Darul, Malaysia

...more addresses

E-mail Addresses:

emilsalim@usu.ac.id; kamalrullah@iium.edu.my

Data availability statement

No data was used for the research described in the article.

Categories/ Classification Research Areas: Chemistry

1 Clinical &

1.25 Molecular & Cell Biology -Citation 1.25.797 Cancer, Autophagy & Apoptosis Topics: Autophagy

Sciences

Sustainable Development Goals: 03 Good Health and Well-being

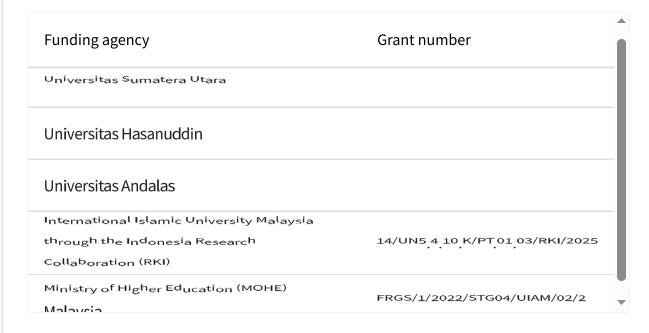
Web of Science **Categories**

Chemistry, Multidisciplinary

Funding

Close funding text

This work was supported by Universitas Sumatera Utara, Universitas Hasanuddin, Universitas Andalas, and the International Islamic University Malaysia through the Indonesia Research Collaboration (RKI) scheme 2025 (Grant/Award Number: 14/UN5.4.10.K/PT.01.03/RKI/2025). Additional funding was provided by the Ministry of Higher Education (MOHE) Malaysia under the Fundamental Research Grant Scheme 2022 (Grant/Award Number: FRGS/1/2022/STG04/UIAM/02/2).



See more data fields

Journal information **RESULTS IN CHEMISTRY** 4.2 **View Journal Impact** Journal **Impact ISSN** 2211-7156 Factor ™ (2024)Current ELSEVIER, RADARWEG 29, 1043 NX AMSTERDAM, **Publisher NETHERLANDS** 0.61 Journal **Journal** Journal Citation Reports TM Citation **Impact** Indicator ™ **Factor** (2024)

Research Chemistry

Areas

Web of Chemistry, Multidisciplinary

Science Categories

Citation Network

In Web of Science Core Collection

0 Citations



124

Cited References

→ View Related Records

How does this document's citation performance compare to peers?

← Open comparison metrics panel

Data is from InCites Benchmarking & Analytics

Use in Web of Science

2 2

Last 180 Days Since 2013

Learn more →

This record is from:

Web of Science Core Collection

 Emerging Sources Citation Index (ESCI)

Suggest a correction

If you would like to improve the quality of the data in this record, please <u>Suggest a correction</u>

124 Cited References

→ View as set of results

Showing 30 of 124

(from Web of Science Core Collection)

Health Benefits and Pharmacological 1 **Aspects of Chrysoeriol**

Aboulaghras, S; Sahib, N; (...); Bouyahya, A Aug 2022 | PHARMACEUTICALS 15(8)

Free Full Text from Publisher View Full Text on ProQuest

58 Citations

79

References

Related records

2/9/25, 3:33 PIVI	Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review-vveb of Scie	····

2/9/25, 3:33 PIVI	Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review-vveb of Scie	····

2/9/25, 3:33 PM	Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review-Web of Scie.	٠.

2/9/25, 3:33 PIVI	Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review-vveb of Scie	····

2/9/25, 3:33 PIVI	Natural chromones targeting autophagy signalling pathways as potential anticancer interventions: a systematic review-vveb of Scie	····

Natural chromones targeting autophace		

12/9/25, 3:33 PM