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

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**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



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

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

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