The medicinal potential of synthetic and naturally occurring anticancer pyran scaffolds

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Pyran is a therapeutically vital oxygen containing heterocyclic moiety which exhibits an array of credible pharmacological properties. Pyran is also one of the important structural units found widely in natural products, such as coumarins, benzopyrans, sugars, flavonoids, xanthones and other natural products. The diverse anticancer capabilities of pyrans have been additionally evidenced by a number of recent publications, which have demonstrated that this heterocycle has been a focal point for researchers worldwide. This review provides a summary of pyran-based anticancer compounds reported in past years and focuses on advancements in the field of naturally occurring pyrans as anticancer agents. The discussion will also include the structure-activity relationships, along with the structure of the most promising molecules, their biological activities against several human cancer cell lines, mechanistic insights discovered through the pharmacological evaluation, and molecular modeling of pyran-based molecules. Consequently, an overview of the state-of-the-art on pyrans and their analogs as anticancer candidates is presented. The promising activities revealed by these pyran-based scaffolds undoubtedly places them on the front stage for the discovery of prospect drug candidates and could also be of great interest to researchers working on the synthesis of antitumor drug candidates.

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