

**Tentative Outline**  
**Anti-Cancer Agents in Medicinal Chemistry**

**TITLE: “Metformin and Cancer: Past, present and future”**

*Guest Editor(s): Rohit Upadhyay*

**Aims & Scope:**

Metformin is most widely prescribed anti-hyperglycemic drug to treat type-2 diabetes throughout the world. Since last five years this drug has extensively been explored for its potential effects in several malignancies. Diabetes and cancer both are complex genetic disorders having many overlapping factors or conditions and metformin has a potential to target all of these common conditions directly or indirectly.

Metformin has been linked with many tumor specific mechanisms; however, the mechanisms behind the suppression of cancer cell growth by metformin remain far from completely understood and need to be rationally analyzed. Recent literature advocates metformin as an adjuvant/neoadjuvant drug for a better treatment of multiple types of cancers with many conventional first-line treatment therapies where metformin sensitize cancer cells for conventional and advanced therapies. Metformin may work on “Cancer stem cells”, which act as an explant and are responsible for aggressiveness of the tumor and metastatic relapse. Furthermore, microRNAs expression studies have shown that metformin treatment modulates microRNAs’ expression in aggressive cancer cells towards non aggressive cancer cells.

Genetic epidemiological data for metformin usage in cancer patients is controversial therefore a systematic re-assessment of these reports is mandatory. In addition there are some other molecules/genes evident to be involved in metformin mediated pathways which may synergistically or independently influence incidence and/or prognosis of different cancers.

This thematic issue will discuss current knowledge and future directions on metformin usage for cancer treatment and prevention.

**Key words:** Metformin, Cancer, adjuvant drugs, stem cells, micro-RNAs, genetic variations

**Subtopics:**

- 1) A brief history of Metformin: from Diabetes to PCOS to Cancer
- 2) Common targets of diabetes and cancer for metformin
- 3) Mechanisms of metformin action in different cancers
- 4) Metformin: A potential adjuvant drug for cancer
- 5) Targeting cancer stem cells with metformin
- 6) Effect of metformin on cancer specific micro-RNAs (oncomiRs)
- 7) Genetic epidemiology of metformin usage in cancers: Hope, hype or some unexplored genetic links?

**Schedule:**

Manuscript submission deadline: **1<sup>st</sup> January 2020**

Peer Review Due: 1<sup>st</sup> February 2020

Revision Due: 1<sup>st</sup> March 2020

Notification of acceptance by the Guest Editor: 8<sup>th</sup> March 2020

Final manuscripts due: **15<sup>th</sup> March 2020**

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