

Combination Therapy Approach Using Novel Biguanides For Cancer Treatment

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Technology description

Summary

Researchers in the UCLA Departments of Molecular and Medical Pharmacology, Chemistry and Biochemistry, Surgery, and Medicine have developed novel metformin analogues which, when combined with immune checkpoint inhibitors, enhance the therapeutic benefit of these inhibitors in treating triple-negative breast cancer and other malignancies.

Background


Immune checkpoint inhibitors, which target proteins produced by the immune system that help tumor cells to evade immune detection, exhibit antitumor efficacy in only a minority of patients afflicted with cancers such as melanoma and triple-negative breast cancer (TNBC). Additionally, metformin, a biguanide with antitumor activity that is thought to be at least partly immune-mediated, has been shown to have limited success in treating cancer when used as a single agent. A combination therapy of immune-based cancer treatments may provide synergism and more effectively harness the immune response, thereby enhancing both antitumor efficacy and patient response rates.

Innovation

Researchers in the UCLA Departments of Molecular and Medical Pharmacology, Chemistry and Biochemistry, Surgery, and Medicine have developed novel metformin analogues which, when combined with immune checkpoint inhibitors, enhance the therapeutic benefit of these inhibitors in treating triple-negative breast cancers and other malignancies. Initial studies show that this combination therapy decreases tumor volume and inhibits tumor suppressive microenvironments more effectively than treatment with biguanides and immune checkpoint inhibitors as single agents. These initial studies provide evidence of a potential synergism between immune checkpoint inhibitors and the novel metformin analogues which could extend the benefits of immunotherapy to a larger percentage of cancer patients.

Application area

 Treatment of TNBC

 Treatment of other malignancies

Advantages

- Enhances therapeutic benefit of immune checkpoint inhibitors in treating TNBC and other malignancies
- Exhibits greater antitumor efficacy than treatment with biguanides as single agents
- Extends benefits of immunotherapy to a larger percentage of cancer patients

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