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Review article

# Recent progress on small molecule TLR4 antagonist against triple-negative breast cancer progression and complications

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## Abstract

Toll-like receptor 4 (TLR4) plays a vital role in the innate immune response, but its overactivation has been associated with several diseases, such as aggressive progression of triple-negative breast cancer (TNBC). As a result, inhibiting TLR4 has emerged as a potential therapeutic strategy for this challenging breast cancer subtype. This review summarizes recent advancements in the development of small-molecule TLR4 antagonists to suppress TNBC growth, metastasis, and chemotherapy resistance. We also examine their potential in managing cancer-related complications and propose future directions for their application in TNBC therapy.

## Graphical abstract