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Bioactive constituents of animal-derived traditional Chinese medicinal materials for breast cancer: opportunities and challenges

Key words: breast cancer; traditional Chinese medicinal materials (TCMM); bioactive constituents; anticancer effects

Research Summary

This review systematically summarized and analyzed the animal-derived TCMMs along with their active components and anti-breast cancer effects that included the following aspects:

- **Regulation of cell cycle arrest**
- **Cell proliferation**
- **Cell apoptosis**
- **Drug resistance**

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Innovation points

- **Introduction** of main animal-derived traditional Chinese medicinal materials (TCMMs) along with their active components for breast cancer treatment

- **Summary** of the experimentary evidence of the anti-breast cancer effects of animal-derived TCMMs in breast cancer.

- **Emphasis** of the issues remained in this area that require urgent consideration including the future direction, highlights of unitilization of multi-omics technologies as well as drug delivery and transportation systems.

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Figure 4

Innovation points

Several figures were illustrated to summarize the action pathways involved in the anti-breast cancer effects of animal-derived TCMMs .

Figure 1 | Action pathways involved in the anti-breast cancer effects of bioactive components of Ophiocordyceps sinensis.

Figure 2 | Action pathways associated with the anti-breast cancer effects of NTCD

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