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The use of epigenetics in the treatment of triple-negative breast cancer, focusing on lncRNA

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Objective: In triple-negative breast cancer (CMTN), the standard therapeutic procedure is usually not very effective due to the aggressiveness of the disease. Therefore, it is important to identify and characterize new forms of treatment for this neoplasm. In this context, the study of the genetic material of diseases has gained notoriety among alternative forms of therapy, as long non-coding RNAs (lncRNAs) have been identified in neoplastic cells. Therefore, the aim of this study was to evaluate the use of epigenetics in the treatment of CMTN, with emphasis on lncRNAs. **Methodology:** A systematic review of the specialized scientific literature was carried out, in the PubMed database, with the descriptors: “breast cancer,” “epigenetic,” and “treatment”; the Boolean operator: “AND”; and the filters: “free full text,” “adults: 19+ years,” and publication date from 2021 to 2023. A total of 32 articles were identified, with 3 included. **Results:** Epigenetics influences the treatment of breast cancer; as the lncRNA was found in neoplastic cells, it was possible to monitor the prognosis of the disease. The lncRNA Uc003xsl.1 was associated with a poor prognosis, as it was related to advanced stages of CMTN, increasing the transcriptional activity of NFkB, which promotes tumor progression. On the contrary, the lncRNA LINC00472 proved to be a marker of good prognosis, as it inhibited the proliferation, invasion, and migration of neoplastic cells in the CMTN. Furthermore, with regard to breast cancer, lncRNA IGF-2AS proved to be an important biomarker, as it slows tumor growth in vivo, repressing malignancy and tumor progression. Therefore, lncRNAs have gained notoriety in treatment as regulators of breast cancer tumorigenesis. **Conclusion:** Thus, the use of epigenetics in the treatment of CMTN has proven to be essential to curbing neoplastic cells, as it interferes with tumor proliferation in different ways, either by influencing transcription or by slowing down growth.

Keywords: breast cancer; treatment; epigenetics.