

RESUMO SIMPLES - REVI - REVISÃO DE LITERATURA

**BIOACTIVE COMPOUNDS AS MODULATORS OF ADVERSE EFFECTS
INDUCED BY BISPHENOL A (BPA) IN MALE AND FEMALE REPRODUCTIVE
SYSTEMS IN MOUSE MODELS: A SYSTEMATIC REVIEW**

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Infertility is a global concern that affects approximately 15% of couples; it is a condition that interferes with achieving a natural pregnancy. There are several factors that compromise the male and female reproductive systems in terms of gametogenic parameters. Disruptions to the biological cycle directly and negatively affect reproductive function through endogenous and exogenous factors. Bisphenol A (BPA) acts in the body as a xenoestrogen, which can interact with alpha and beta estrogen receptors (ER α , ER β) and androgen receptors, capable of directly impacting gametogenesis by promoting hormonal dysfunction and morphological changes in the gonads. In the search for alternatives that can mitigate or resolve the problem of induced infertility, natural medicines emerge as viable resources for addressing the current challenge. In

this context, there is growing interest in strategies capable of mitigating the adverse effects of environmental contaminants on male and female fertility, thereby protecting the reproductive system. Intervention studies were retrieved from PubMed, Scielo, Scopus, ScienceDirect, and Web of Science using the search terms “(bisphenol A) AND (bioactive compounds) AND (male reproductive system OR female reproductive system) AND (murine models OR rats)” to identify relevant articles. The studies identified were compiled, analyzed, and filtered by two reviewers working independently. The selection process narrowed the initial 1,459 articles down to 10. The data were described, compared, and discussed from the perspective of bioactive compounds as modulators of the adverse effects of BPA in experimental murine models (rats and mice)—adult males and females—on body weight, reproductive organs, sperm performance, estrous cycle, hormonal levels, oxidative markers, and tissue histology. The physiological data demonstrated a reversal of BPA-induced degeneration, stabilization of serum hormone and enzyme levels, and preservation of the cellular structures involved in gametogenesis following treatment with bioactive compounds, regardless of the animal's sex. Therefore, these bioactive compounds act as estrogen receptor modulators and can be used to counteract the adverse effects of BPA on the male and female reproductive systems.

Palavras-chave: antagonists; gametogenesis; infertility; receptors; toxicity.