18TH INTERNATIONAL İSTANBUL SCIENTIFIC RESEARCH CONGRESS PROCEEDINGS BOOK | VOLUME - 1

DECEMBER 28-30, 2025 | İSTANBUL, TÜRKİYE

PARTICIPATION FROM
21 DIFFERENT COUNTRIES



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ISBN: 9 7 8 - 9 9 5 2 - 6 1 0 - 1 6 - 1
DOI: https://doi.org/10.30546/19023.978-9952-610-16-1.2025.5078.

BZT TURAN
PUBLISHING HOUSE

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ONLINE & IN-PERSON PARTICIPATION

ZOOM & ISTANBUL, TURKIYE

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BZT AKADEMi YAYINEVi®

PUBLISHED IN BAKU, AZERBAIJAN

TR: +90543 671 0123 AZ: +994 50 300 2920

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Publishing Date: 31.12.2025

ISBN: 978-9952-610-16-1

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CURRENT ANESTRUS MANAGEMENT IN EWES: THE RISING ROLE OF NON-STEROIDAL REPRODUCTIVE AGENTS

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Abstract

Seasonal anestrus in ewes results from photoperiod-mediated suppression of hypothalamic GnRH pulsatility, leading to reduced LH secretion and cessation of ovulatory activity. To maintain flock fertility and sustain lamb production during this period, estrus synchronization remains essential, and progestagen-based protocols are widely employed for this purpose. However, despite their practical effectiveness, these steroidal treatments present notable drawbacks, including residue concerns, welfare issues, and environmental impact, highlighting the need for alternative non-steroidal approaches. Recent advances in reproductive neuroendocrinology have identified several non-steroidal compounds capable of reactivating the reproductive axis by targeting central regulatory pathways. Among these, kisspeptin analogs directly stimulate KISS1R-expressing neurons, inducing robust GnRH/LH secretion and reinitiating cyclic ovarian activity. Dopamine antagonists facilitate reproductive activation by suppressing the heightened dopaminergic inhibition originating from A15 neurons, thereby indirectly enhancing GnRH pulsatility and follicular progression. Aromatase inhibitors, on the other hand, transiently suppress estradiol synthesis, thereby reducing the inhibitory feedback exerted on the hypothalamic GnRH neurons and facilitating increased GnRH release. Collectively, evidence indicates that these non-steroidal strategies target the major neuroendocrine bottlenecks underlying seasonal anestrus through kisspeptin, dopaminergic, and estrogen-feedback modulation. Their short-acting profiles reduced welfare concerns, and lack of steroid residues position them as promising next-generation tools for estrus induction and synchronization in anestrous ewes. This presentation will summarize their mechanisms of action, current efficacy data, and potential integration into reproductive management programs.

Keywords: anestrus, estrus induction, ewes, non-steroidal agents.