



# CAPNOGRAPHY WAVEFORM DURING ANESTHETIC INDEX DETERMINATION IN CHICKENS (*Gallus gallus domesticus*)



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## Introduction

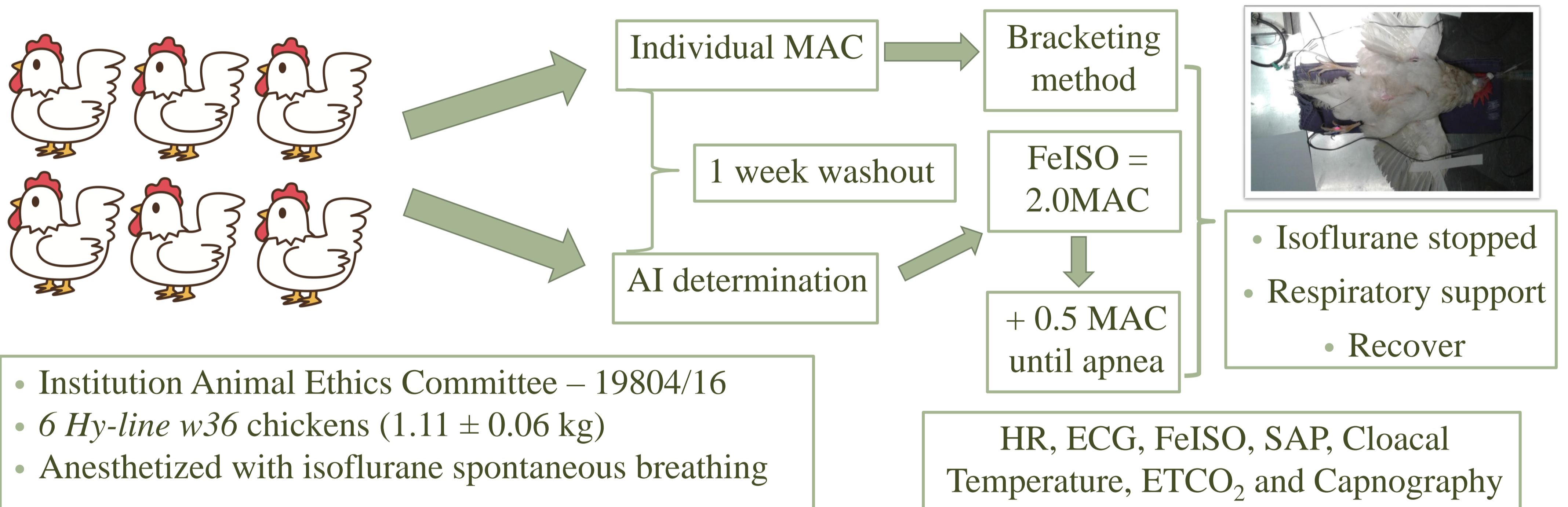
The respiratory anesthetic index (AI) of an inhalant anesthetic is the ratio between the expired concentration required to induce apnea and its minimum anesthetic concentration (MAC) and can be used as an indicator of drug safety.

Birds have limited functional residual capacity, which limits the duration of apnea tolerated without considerable risk of hypoxemia and death. In ducks (*Anas platyrhynchos*), the isoflurane AI is 1.65, and in chickens, is 2.80. However the capnographic waveform changes during this determination were not reported.

## Aim

To report the variation of capnography waveforms observed during the AI determination on chickens.

## Material and Methods

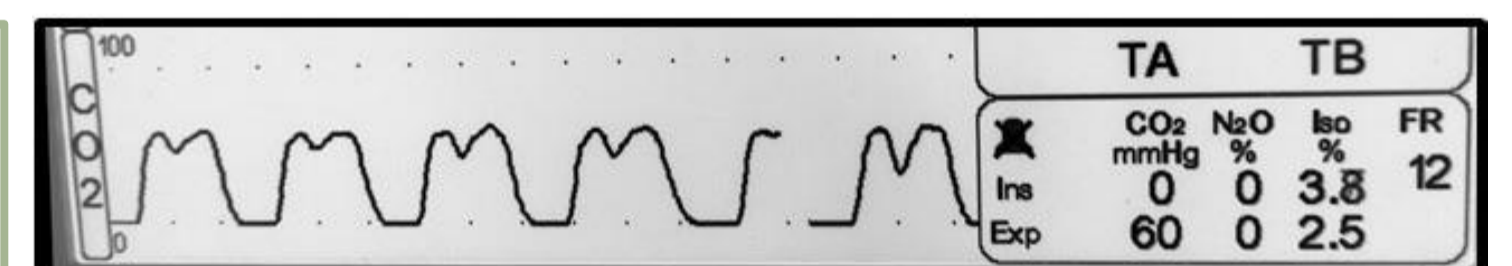


## Results

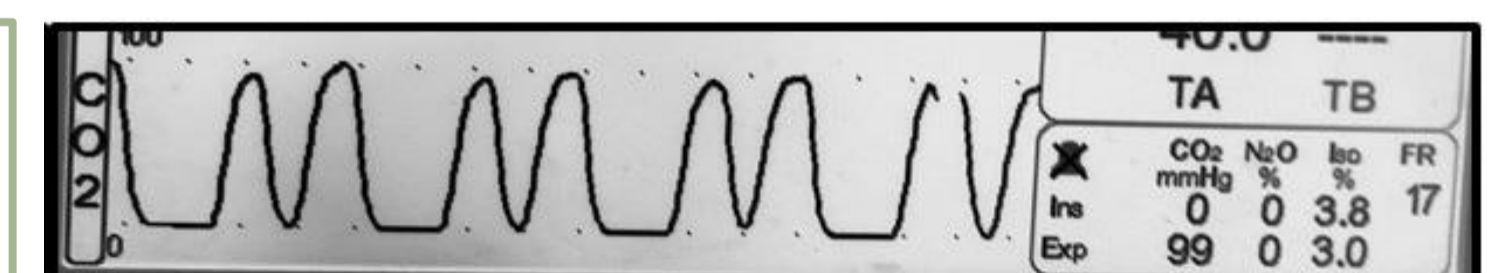
- During MAC determination, the capnography waveforms presented a normal pattern
- During AI determination = gap between caudal and cranial respiratory movement as Fe<sub>ISO</sub> increase

increase	Mean ± SD	MAC	AI
HR (bpm)	250 ± 50	320 ± 34*	
ETCO <sub>2</sub> (mmHg)	35 ± 6	103 ± 11*	

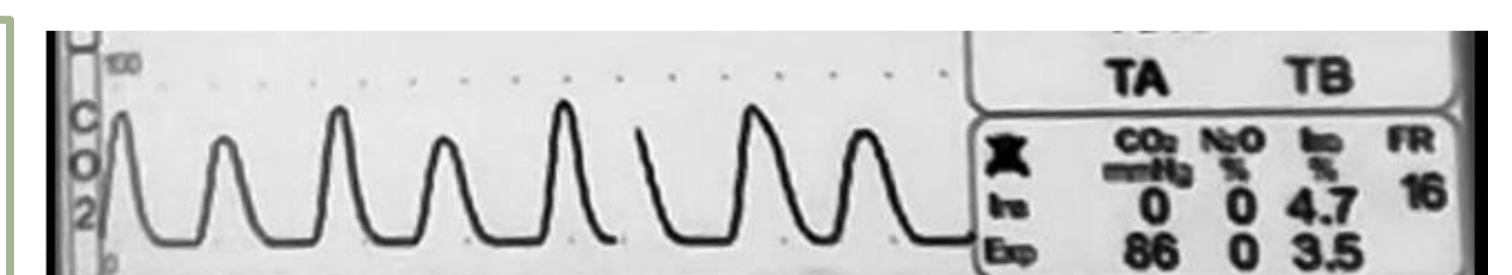
Notch on phase III at 2.0 MAC



Double-wave at 2.5 MAC



Total separation at 3.0 MAC



## Conclusion

There is a distinct change in the pattern of respiratory movement and consequently capnography waveform in chickens related to the increase in isoflurane end-tidal concentration. Observing any these patterns could be indicative of an excessive anesthetic depth.

## References

Ludders JW, Mitchell GS, Rode J (1990) Minimal anesthetic concentration and cardiopulmonary dose response of isoflurane in ducks. *Veterinary Surgery*, 9 (4), 304-307.

Midon M, Escobar A, Yamada DI, et al. (2021) Isoflurane respiratory index in chickens (*Gallus gallus domesticus*). *Journal of Zoo and Wildlife Medicine*, 52 (1), article in press.

Regan MJ, Eger EI II (1967) Effect of hypothermia in dogs on anesthetizing and apneic doses of inhalation agents: Determination of the anesthetic index (Apnea/MAC). *Anesthesiology*, 28 (4), 689-700.