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Mutations in KCNQ potassium channels cause pharyngeal pumping defects in *C. elegans*

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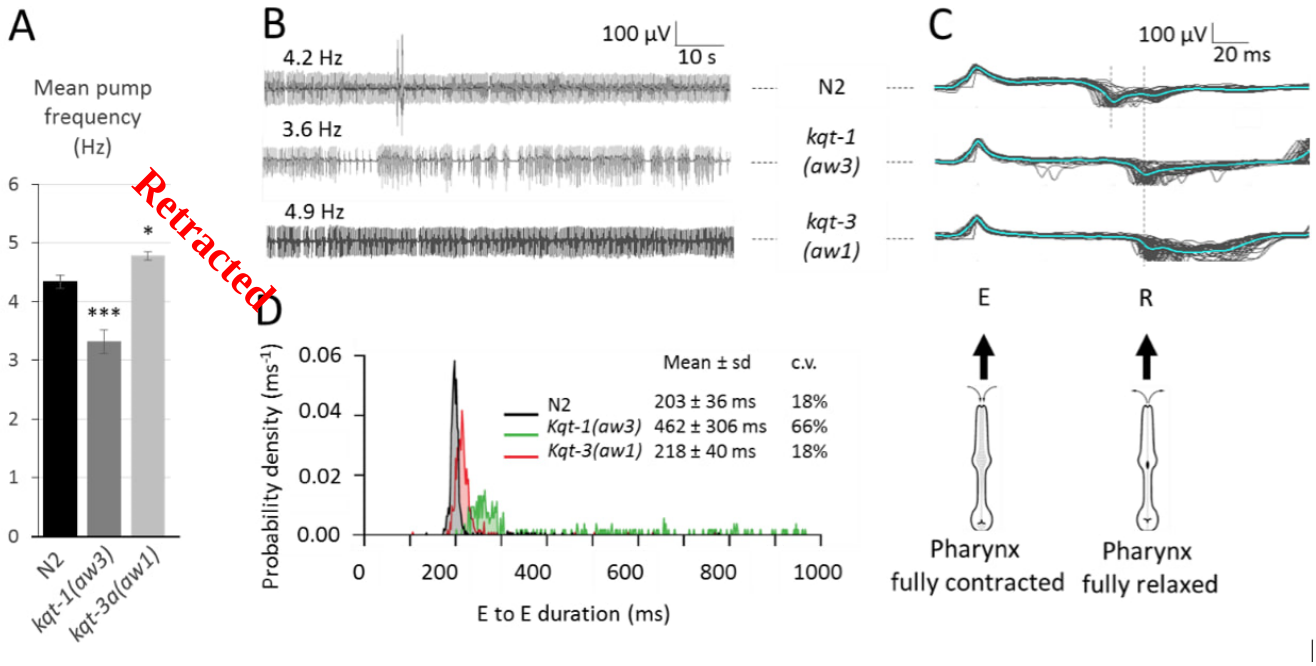

Retraction

This article has been retracted on Aug 23, 2019.

Description

Pumps were stimulated with 10mM 5HT in M9 recorded as electropharyngeograms (EPGs) for 2 minutes in a NemaMetrix ScreenChip, and analyzed using NemAnalysis software (NemaMetrix). The null mutant strains *kqt-1(aw3) and kqt-3 (aw1)* were kindly donated by Dr. Aguan Wei (Wei et al., 2002)

A) Pump frequency in *kqt-1(aw3)* animals was significantly lower than in N2s, while *kqt-3(aw1)* worms showed an increase in pump frequency (*p<0.05; ***p<0.01; 1-tailed Mann-Whitney U-test; n = 21-23 worms in each strain).

B) Microfluidic EPG recordings show that pumping pattern in *kqt-1(aw3)* mutants is arrhythmic, with frequent drops in frequency.

C) Overlay of first 50 pumps of recordings show that pump duration is higher in *kqt-1(aw3)* and *kqt-3(aw1)* animals than in N2s. Pumps are showed aligned on E spikes, which occur when the pharynx is fully contracted.

D) Duration histogram illustrating the probability of occurrence of inter-pump interval (E to E duration) for each mutant strain. Histograms were binned to 4 ms width and normalized to reach an area underneath the curve equal to 1 (duration 100% likelihood to occur). In *kqt-1(aw3))* animals, the time between two pumps is significantly increased compared to N2s ($p < 0.01$).

Reagents

Molecule: Serotonin
Control Strain: N2

References

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Wei, A., Yuan, A., Fawcett, G., Butler, A., Davis, T., Xu, S. Y., & Salkoff, L. Efficient isolation of targeted Caenorhabditis elegans deletion strains using highly thermostable restriction endonucleases and PCR. Nucleic Acids Res. 30, e110 (2002). PMID: 12384612.

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