Conditioned Taste Aversion to Salts in Mice

Douglas Lane, Anthony Carbonar, Benjamin Weaver, and Eugene Delay

The Japanese soup base *dashi* has a complex taste that has been suggested to include the five recognized basic taste qualities (salty, bitter, sweet, sour, and umami) (Delay & Kondoh, 2013). The degree to which *dashi's* salts contribute to its overall taste, however, is unknown. This experiment explores the generalization of a conditioned taste aversion (CTA) of *dashi* to its various salt components, including KCl, NaCl, $CaCl_2$ and $MgCl_2$, in mice. It is hypothesized that since these salts contribute to the overall taste of *dashi*, a CTA to *dashi* will generalize back to these salts. To test this hypothesis, a series of preliminary CTA experiments must be conducted to establish a concentration-response gradient for each salt. Mice are conditioned to avoid a high concentration of a particular salt, and then given a series of lower concentrations of that same salt to establish which concentrations they can taste above threshold. In experimental groups, we present the salt as a novel taste stimulus (CS) and pair it with a LiCl injection (US), inducing gastric malaise and subsequently an aversion to the CS. Control mice receive saline injections, which does not have an aversive effect. Lick rates recorded by a gustometer are used to infer the mouse's preference or aversion to each substance. Pilot studies were unsuccessful due to an inability to condition the mice. Though there are no results to present yet, this study is ongoing and data collection will continue throughout 2014 with more groups of mice. Success in this study will enhance our understanding of *dashi's* complex taste and the behavioral aspects of various taste transduction mechanisms.

References

Delay, E.R., Kondoh, T. (2013). Dried-Bonito Dashi: Taste Qualities Evaluated Using CTA Methods in Wild Type and T1R1 KO mice. Huntington Beach (CA): Association for Chemoreception Sciences.