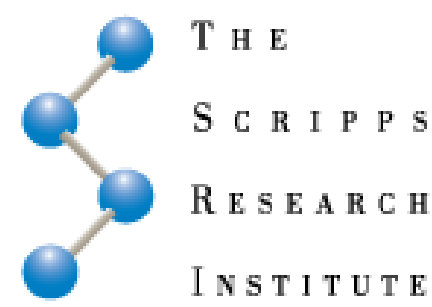


αPVP and MDPV Active Vaccine Attenuates Wheel Locomotor Behavior



Brent R. Kisby¹, Michael A. Taffe¹

¹The Scripps Research Institute, La Jolla, CA 92121

Northeastern University

Introduction

“Bath Salts” are a group of synthetic cathinones with similar psychoactive properties like methamphetamine. The compounds used in this study are MDPV (Methylenedioxypropylvalerone) and αPVP (*alpha*-pyrrolidinovalerophenone). These compounds are highly potent for the Dopamine transporter and moderately potent for the Serotonin transporter (Simmler et al 2012).

There have been several studies in the efficacy of different vaccines to treat the abuse of methamphetamine (Miller, M et al 2015; 2013), cocaine (Carrera MR et al 2000), and heroin (Scholsburg JE et al 2013).

This study was to determine the role of “Bath Salt” vaccine attenuating the stimulant properties of the two synthetic psychostimulants.

Methods/Materials

- Charles-Rivers Sprague-Dawley (n=36), 76 days old at start of study
- Three groups: αPVP vaccine, MDPV vaccine, KLH control
- Vaccine given at week 0
- Boosted on weeks 2 and 4
- Acute i.p dose of drug (0, .25, .5, 1.0, 5.0/ mg/kg) with 4 hour run time
- Rectal temperature every hour pre-injection and at every hour post initial drug challenge

Vaccine Comparison

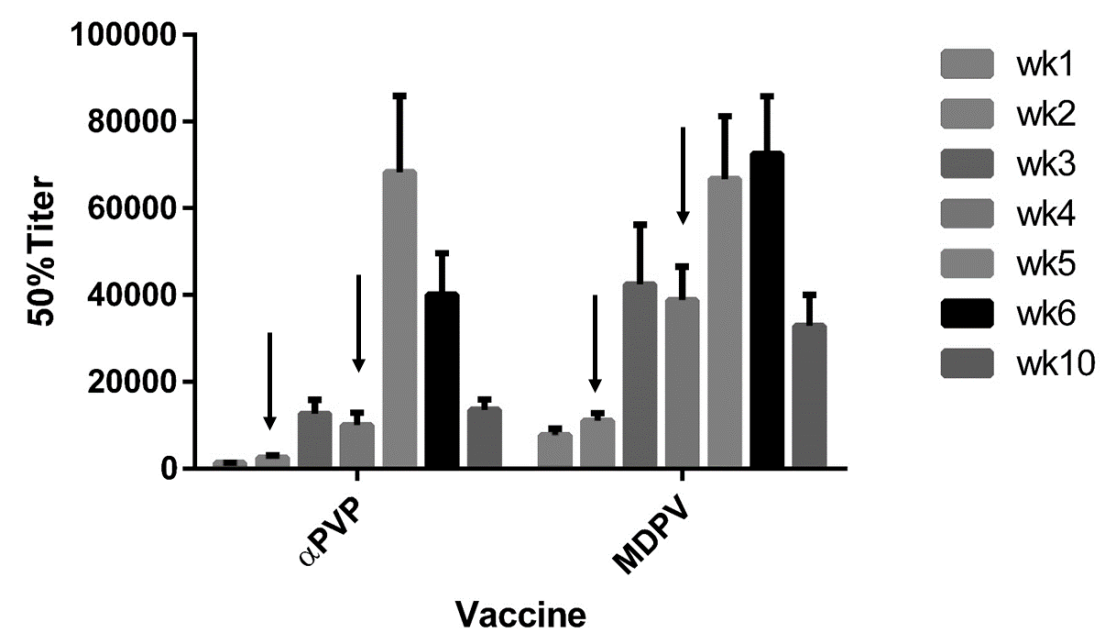
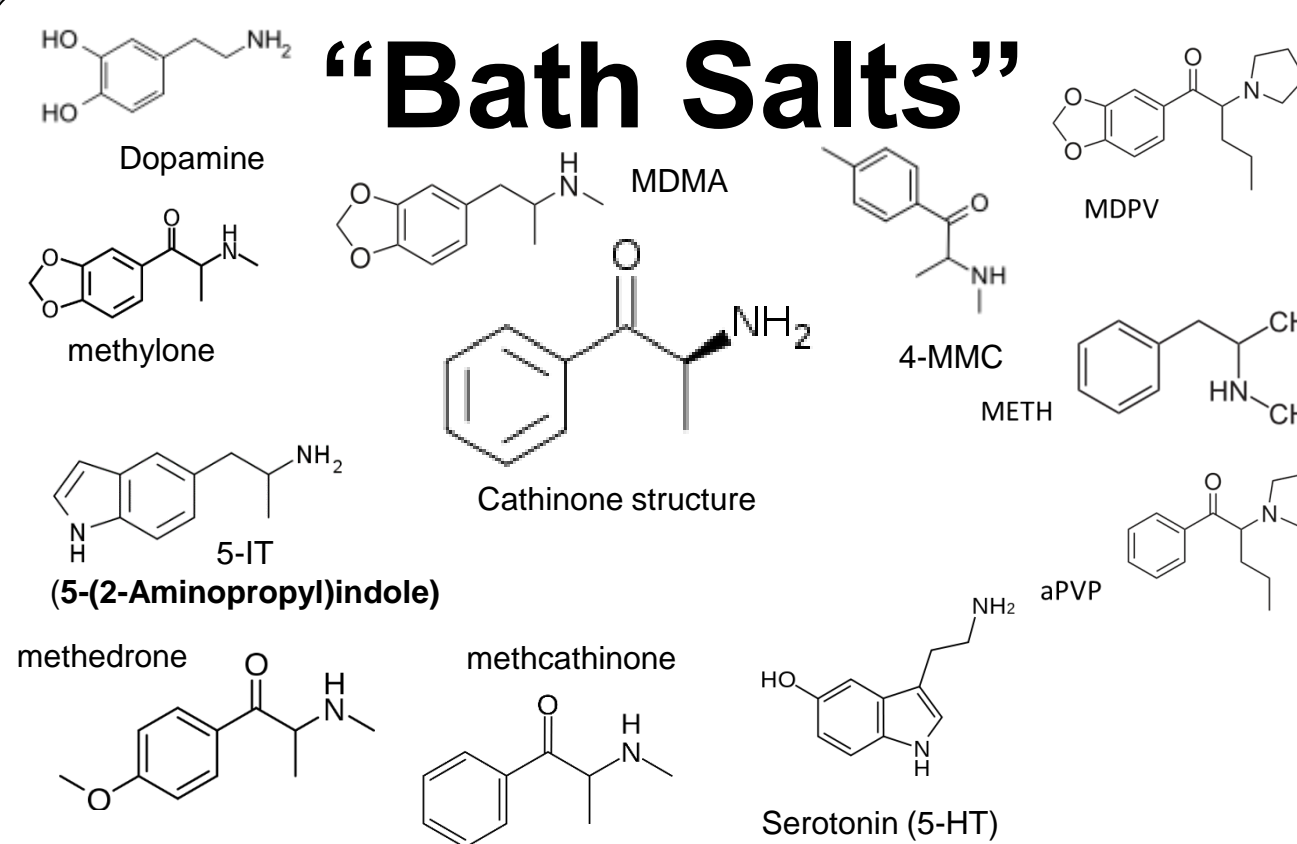
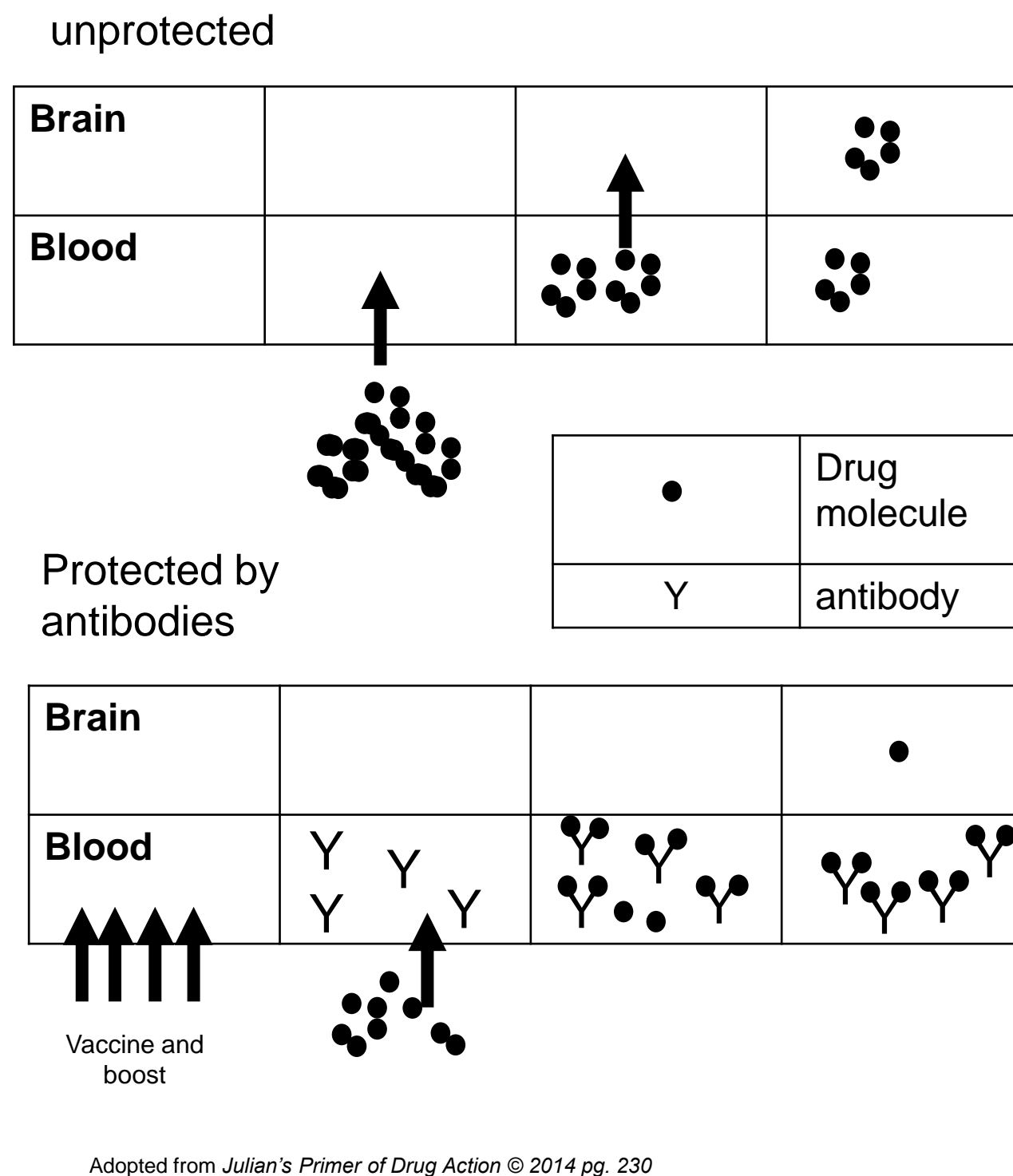


Fig. 1: level of anti-body titer detected by ELISA optical density from rat plasma. The arrows indicate when each rat was boosted with their respective vaccine. Between week 6 and week 10 is when the drug study occurred.

Drug Vaccines



“Bath Salts”: Not Really for your Bath

“Bath Salts” are a group of synthetic cathinones with the phenylethylamine backbone. They are highly potent for both serotonin and dopamine transporters. These synthetic cathinones have been sold under the labels of “plant food”, “lab certified”, “not for human consumption” and “bath salts”. They also go by the terms “meow meow”, “flakka”, and “monkey dust”. They are sold in headshops and were legal for the longest time because the DEA could not schedule the analogs fast enough. With a slight change in structure as indicated below, each drug has their own properties that are more MDMA-like, cocaine-like, or Methamphetamine-like.

Results

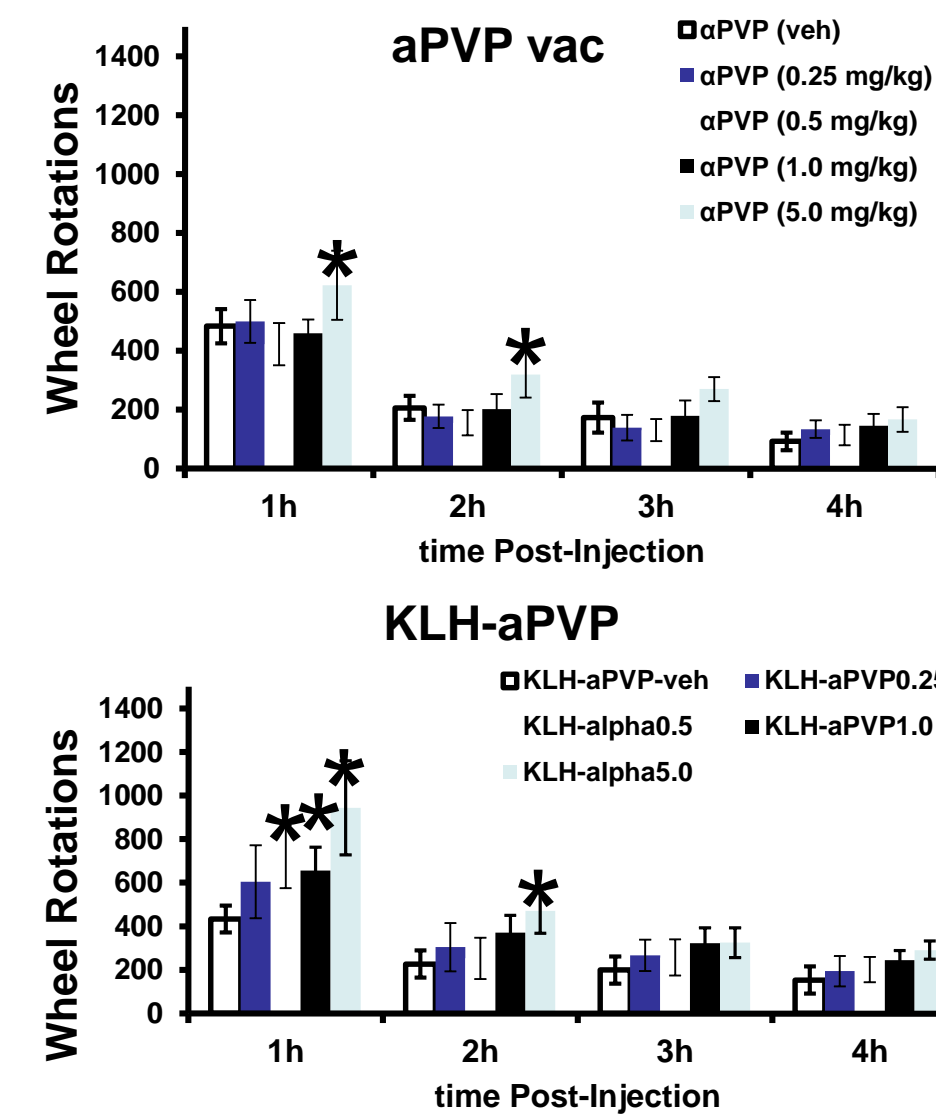


Fig. 2: Total counts of wheel activity (n=12) for aPVP vaccinated animals.

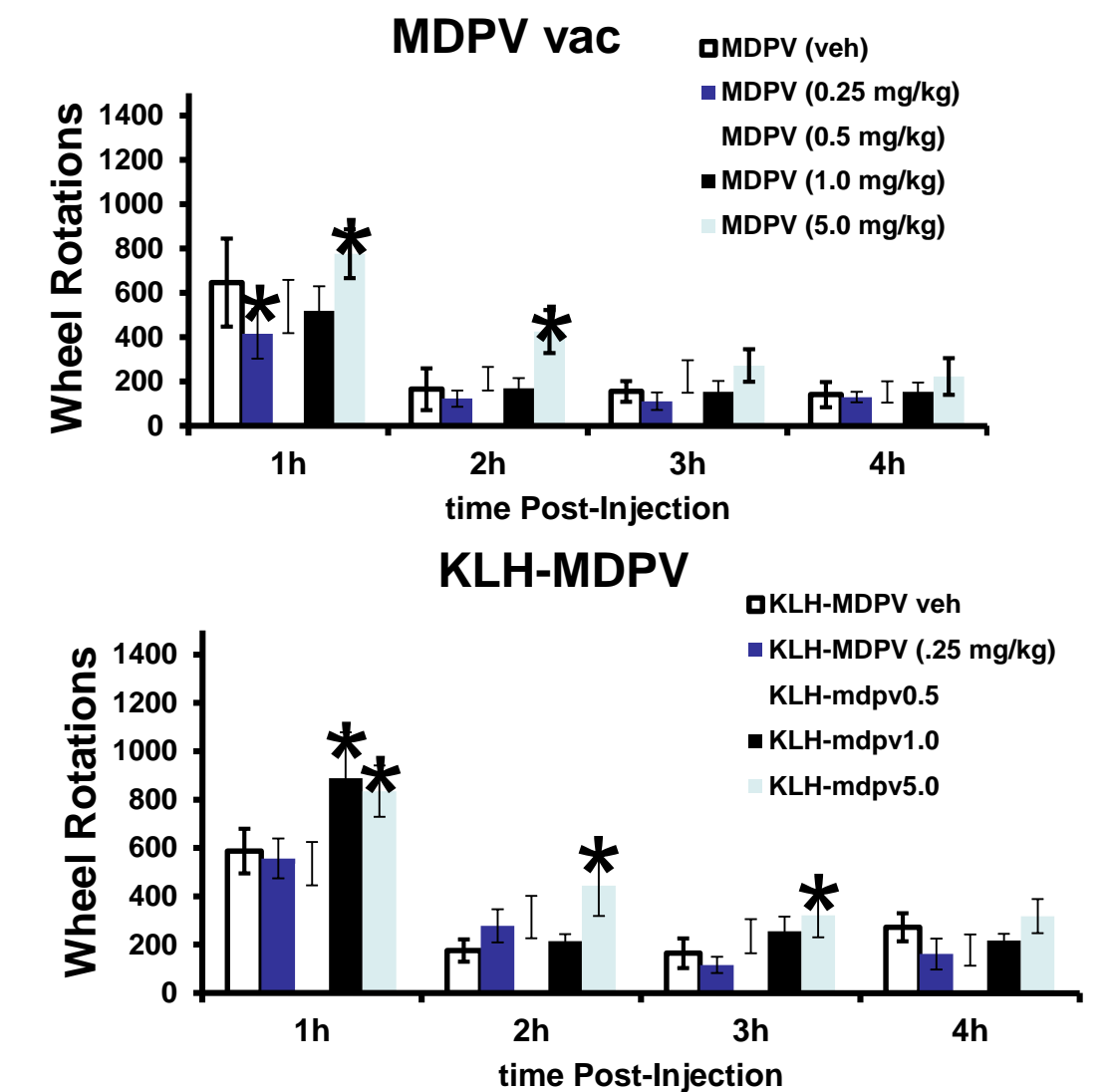


Fig. 3: Total counts of wheel activity (n=12) for MDPV vaccinated animals.

Conclusions

- MDPV/αPVP vaccine show efficacy in decreasing the stimulant locomotor effects of both drugs in low to moderate doses, but not the high dose
- Data mirrors other studies of drug vaccine because there is no protection at the highest dose

Citations

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