

Reusing Beads

Sapidyne has developed bead retrievers for both the KinExA® (Part #: 393100) and Autosampler (Part #: 393120). These accessories capture used beads for reuse in later experiments, reducing material usage. This Tech Note details experimental results supporting the conclusion that beads can be reused several times without significant deterioration in data quality.

Typically only a small percentage of binding sites on the beads are bound in one experiment. This means there are still binding sites available on the beads for future experiments. In testing both hard and soft beads we found that we could capture and reuse the beads several times before seeing any significant changes to the data. The number of times the beads can be reused varies depending on the system. When recycling beads, be mindful of any changes to the data such as system noise, percent error, signal level, and non-specific binding. With reuse, signal level tends to decrease while noise, error, and NSB increase.

Results for Reusing Beads

Mouse IgG, Digoxin, and Insulin were used to test the effects of bead recycling. Standard curves were set up and run for all three systems. Each one went through multiple rounds of testing to ensure reproducible results. The Mouse IgG was coated to both PMMA and Azlactone beads. Each bead type was reused four times before the residual error exceeded 3% (see **Figures 1 and 2**). Even with increased error, all curves maintained overlapping 95% confidence intervals for the measured K_d .

The Insulin system had beads that were used twice before any significant increase to the system noise occurred however there was no significant change in the K_d . The beads for the remaining system were used three times before the error increased above 3%.

Tips on using the Bead Retriever

- Standard 1x PBS with 1 mg/mL BSA should be added to the Particle Reservoir each time the beads are recycled.
- After the first experiment is complete, pipette the recycled beads from the retriever into the original Particle Reservoir.
- If the recycled beads are *not* to be used for a while, ensure they are stored at 4°C to prevent denaturing of the Titrant coated to the bead. They can be stored in their original Particle Reservoir after being removed from the retriever for roughly one week.
- Software versions 3.3.0 and newer are able to support the Autosampler Bead Retriever. All versions of the software are compatible with the KinExA Bead Retriever.
- Please refer to our website under [Parts & Consumables](#) > [Accessories](#) for pricing on the retrievers.
- Installation and operation instructions are provided with the accessories.

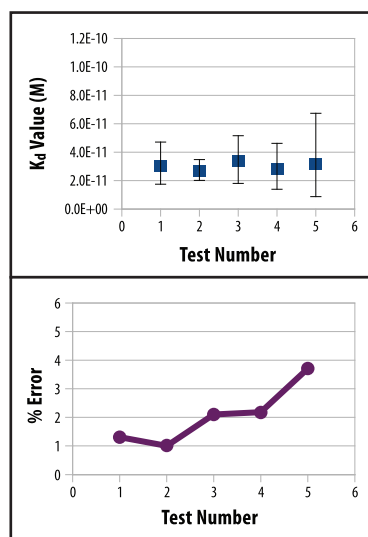


Figure 1. Results for PMMA (Hard) beads coated with Mouse IgG. K_d values are shown on the top graph, percent error is shown on the bottom graph.

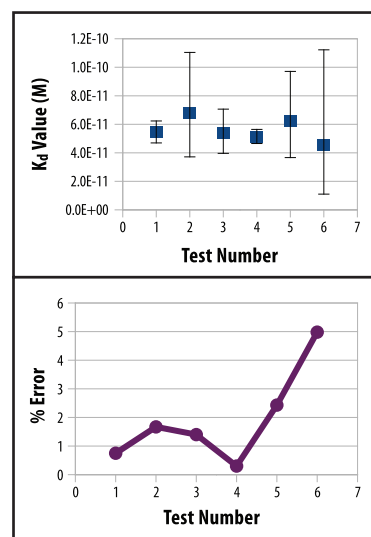


Figure 2. Results for Azlactone (Soft) beads coated with Mouse IgG. K_d values are shown on the top graph, percent error is shown on the bottom graph.