

Development of medication disposal kits to deactivate unused, residual, or expired medications

Anushree Herwadkar¹, Neha Singh¹, Carter Anderson², Tetsuya Watanabe³, William Fowler² Ajay K Banga¹

¹: Mercer University College of Pharmacy and Health Sciences, Atlanta, GA- 30341

²: Verde Environmental Technologies Inc, Burnsville MN 55337 ³: Travanti Pharma Inc, Mendota Heights, MN-55120

Purpose

The objective of this study was to test deactivation agents for development of the MedSorb general medication disposal system.

Methods

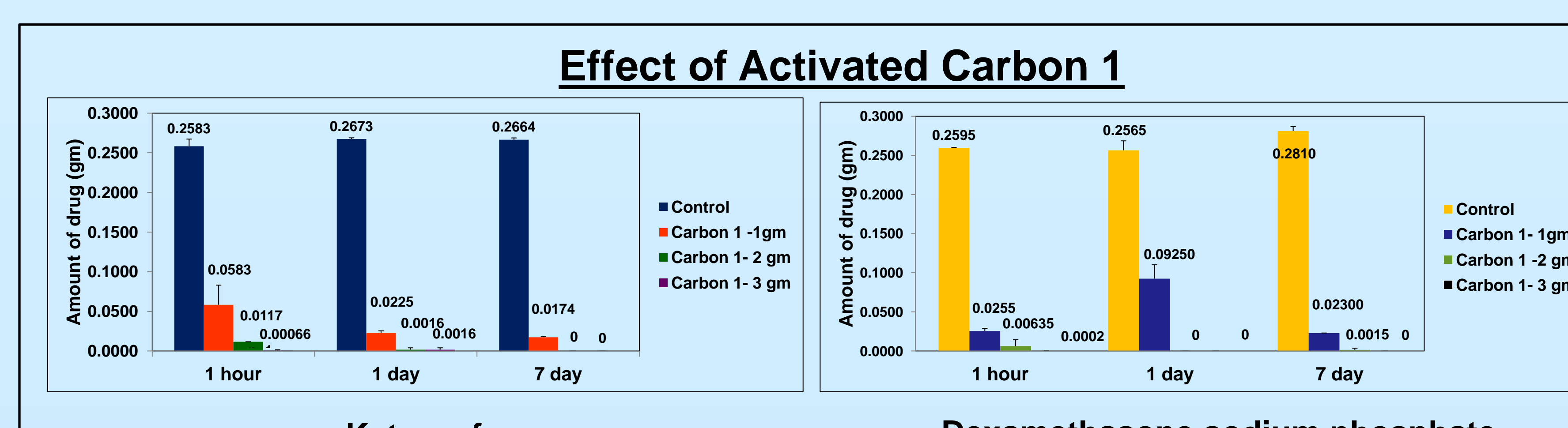
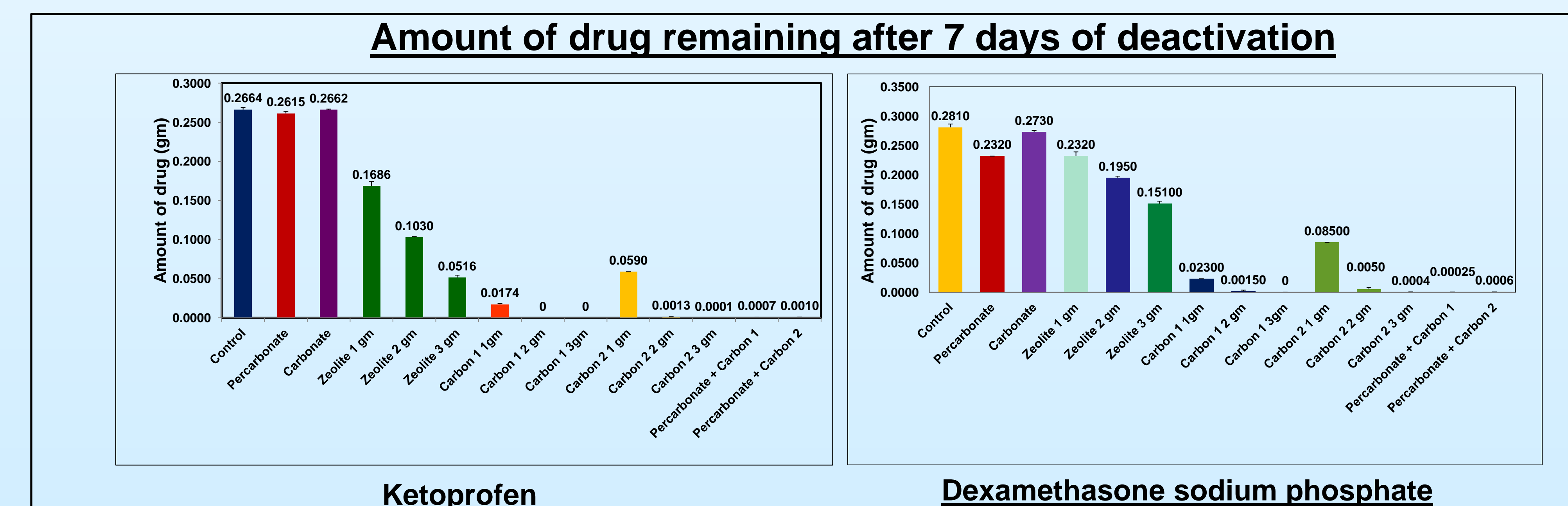
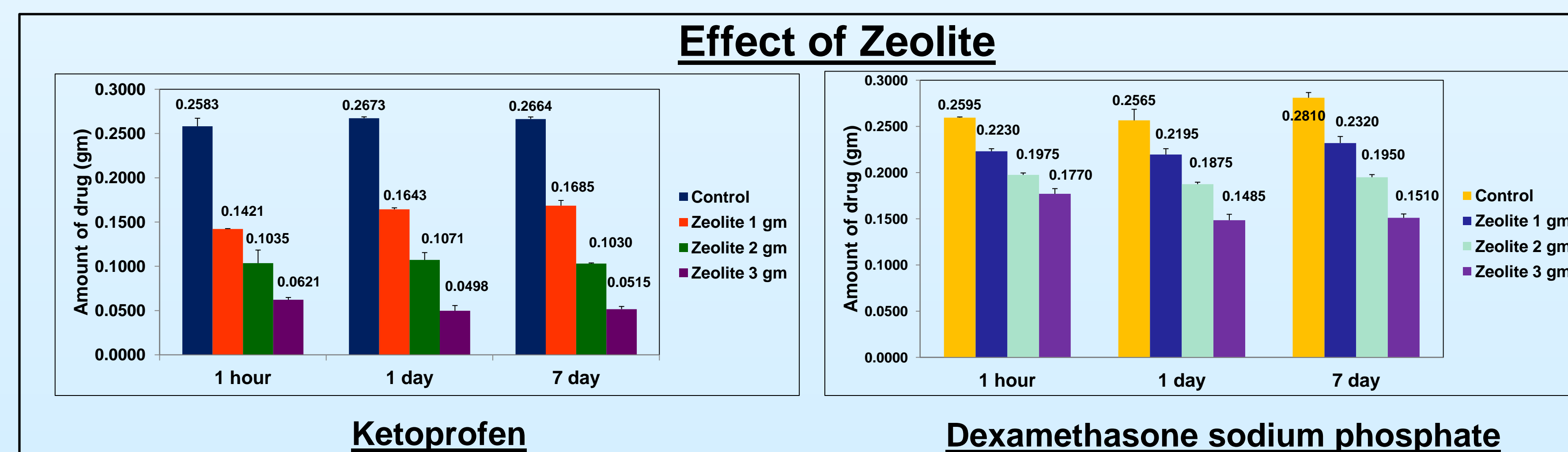
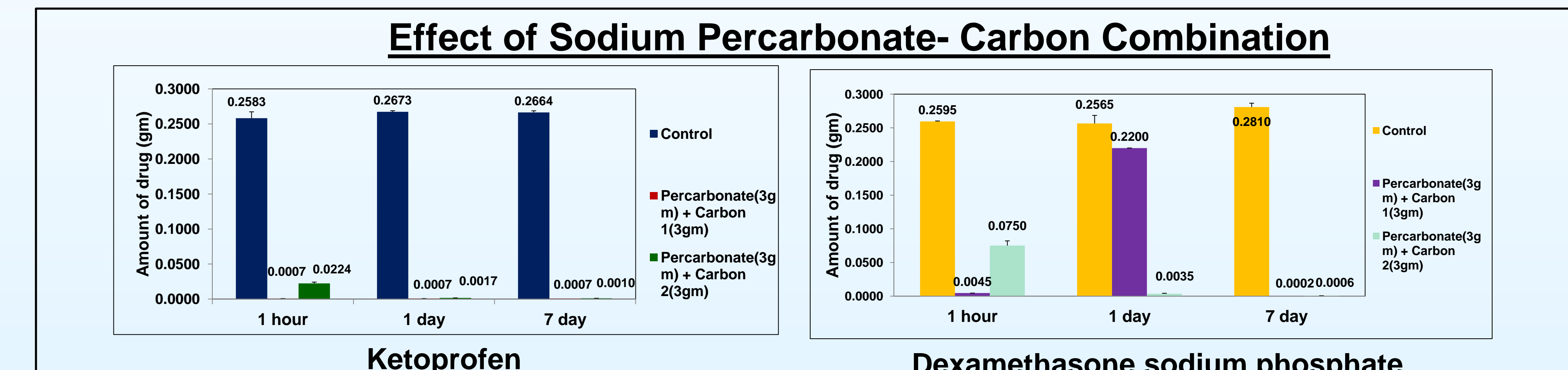
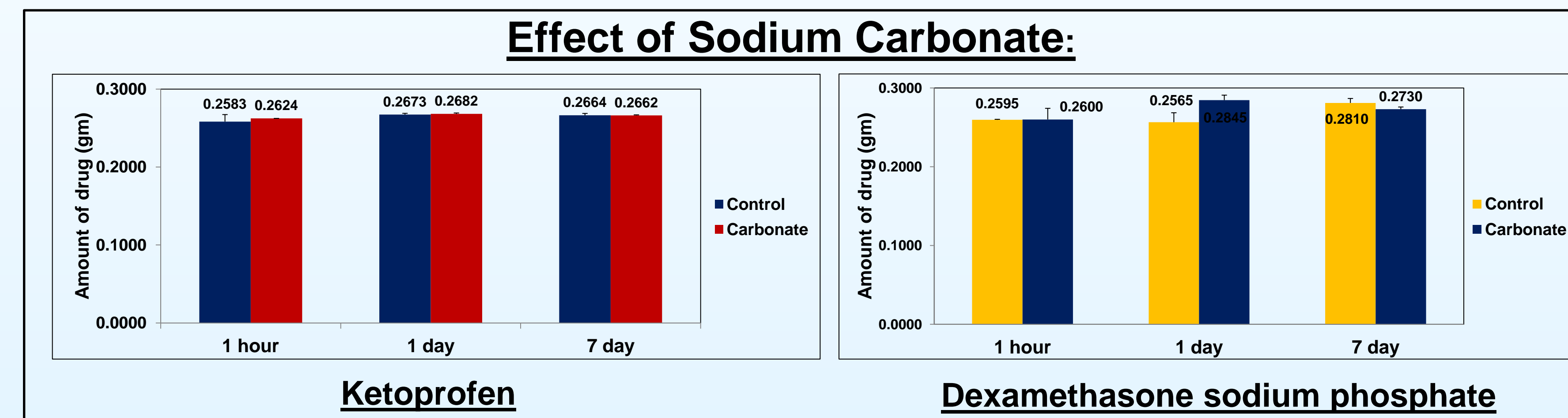
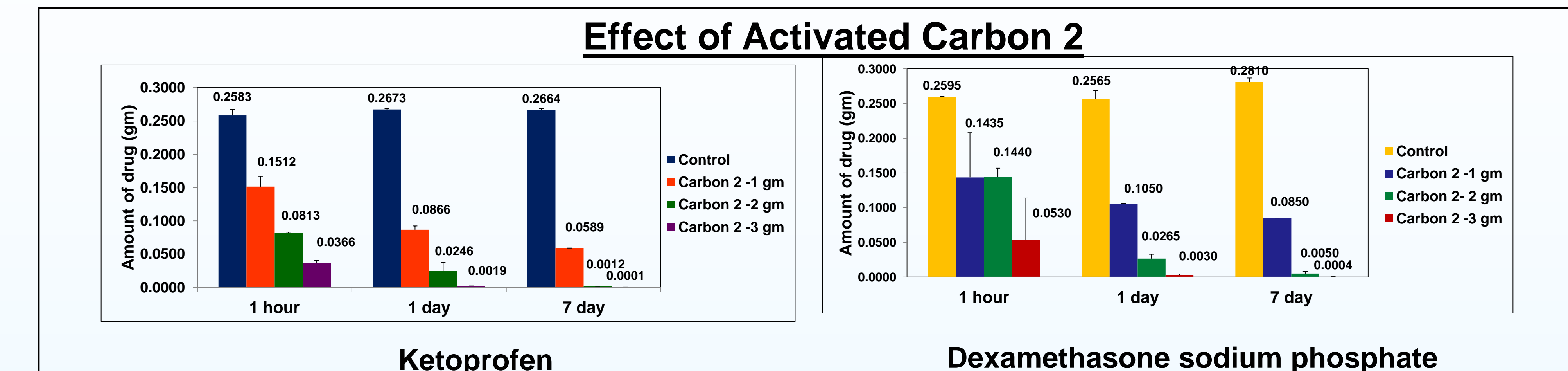
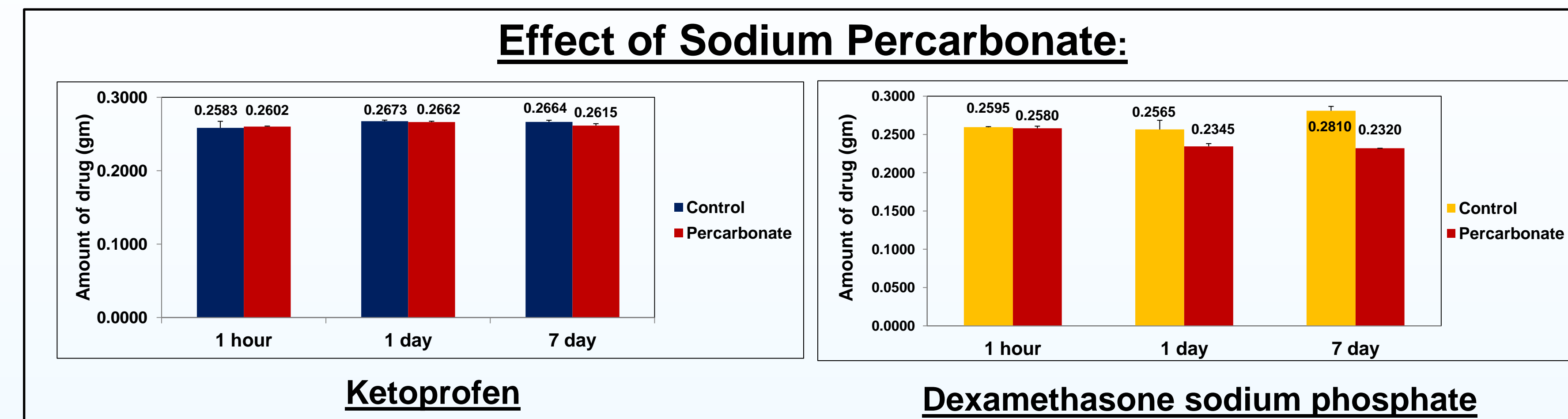
Deactivation agents tested:

- Sodium percarbonate
- Sodium carbonate
- Zeolite
- Activated carbon 1 (Molasses number 180)
- Activated carbon 2 (Molasses number 150)
- Combination of percarbonate and activated carbons

Model Drugs:

- Ketoprofen
- Dexamethasone sodium phosphate

Sample	Carbon 1 (gm)	Carbon 2 (gm)	Na Percarbonate (gm)	Na Carbonate (gm)	Zeolite (gm)	Drug (gm)	Deactivating agent
1	0	0	0	0	0	0.25	Control
2	0	0	3	0	0	0.25	Percarbonate
3	0	0	0	3	0	0.25	Carbonate
4	0	0	0	0	1	0.25	Zeolite
5	0	0	0	0	2	0.25	
6	0	0	0	0	3	0.25	
7	1	0	0	0	0	0.25	Carbon 1
8	2	0	0	0	0	0.25	
9	3	0	0	0	0	0.25	
10	0	1	0	0	0	0.25	Carbon 2
11	0	2	0	0	0	0.25	
12	0	3	0	0	0	0.25	
13	3	0	3	0	0	0.25	Carbon 1 + Percarbonate
14	0	3	3	0	0	0.25	Carbon 2 + Percarbonate



Conclusion

- Ketoprofen and dexamethasone were not susceptible to oxidation or hydrolysis and were not degraded by sodium percarbonate or sodium carbonate
- Both drugs were deactivated by adsorption agents zeolite and activated carbons. Activated carbon 1 was the most effective deactivating agent. Combination of percarbonate with carbon did not have a synergistic effect on deactivation

Acknowledgement: This research project has been funded by Travanti Pharma Inc., Mendota Heights, MN-55120