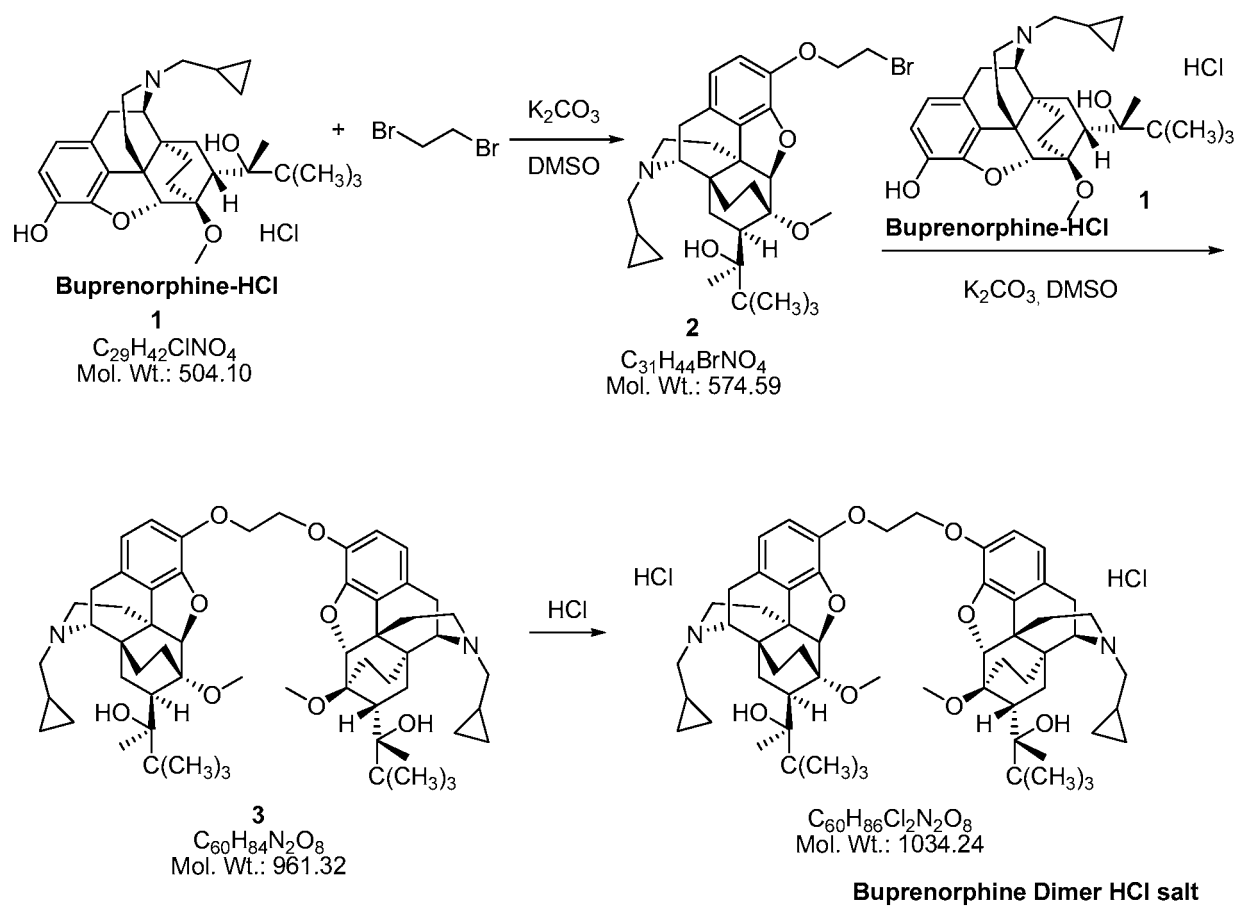
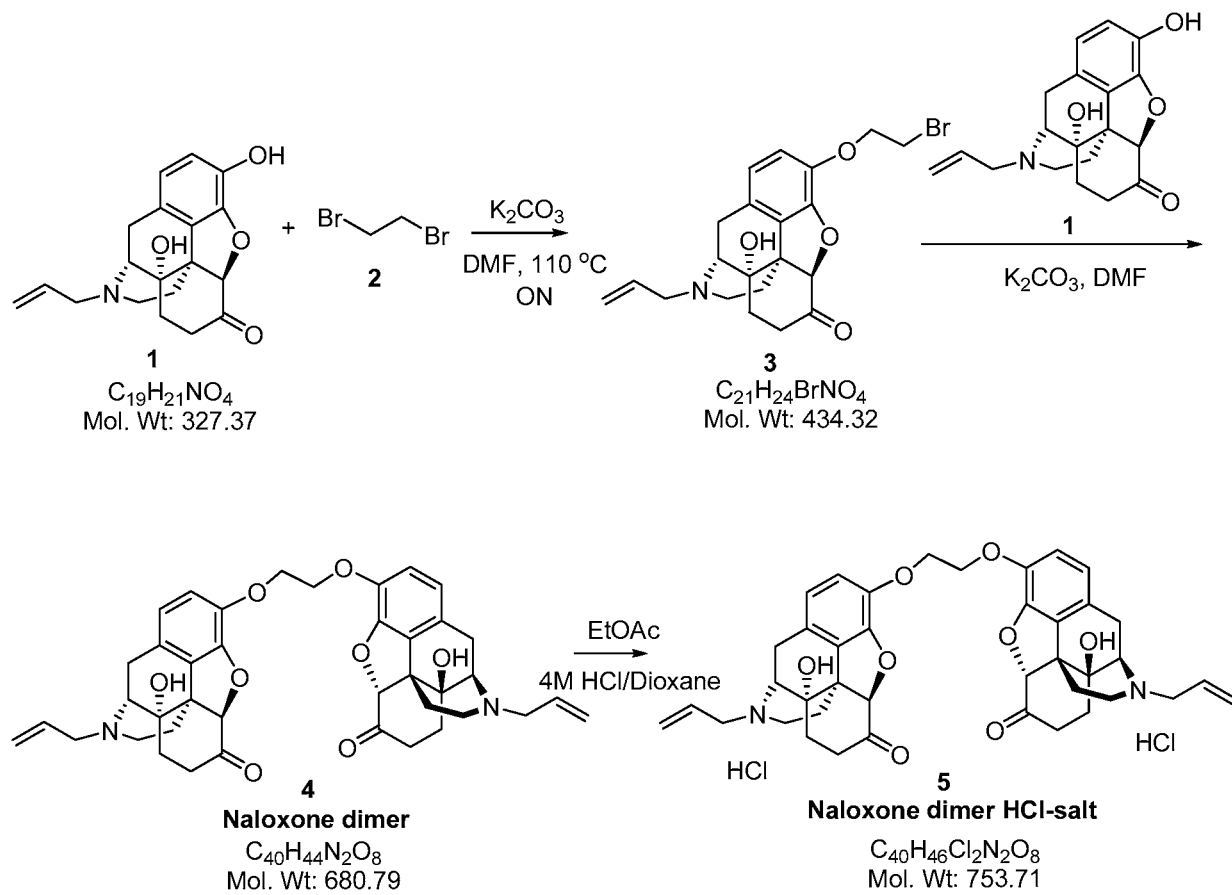


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FIGURE 1**Synthesis of Buprenorphine Dimer HCl Salt**

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FIGURE 2**Synthesis of the Naloxone Dimer HCl Salt**

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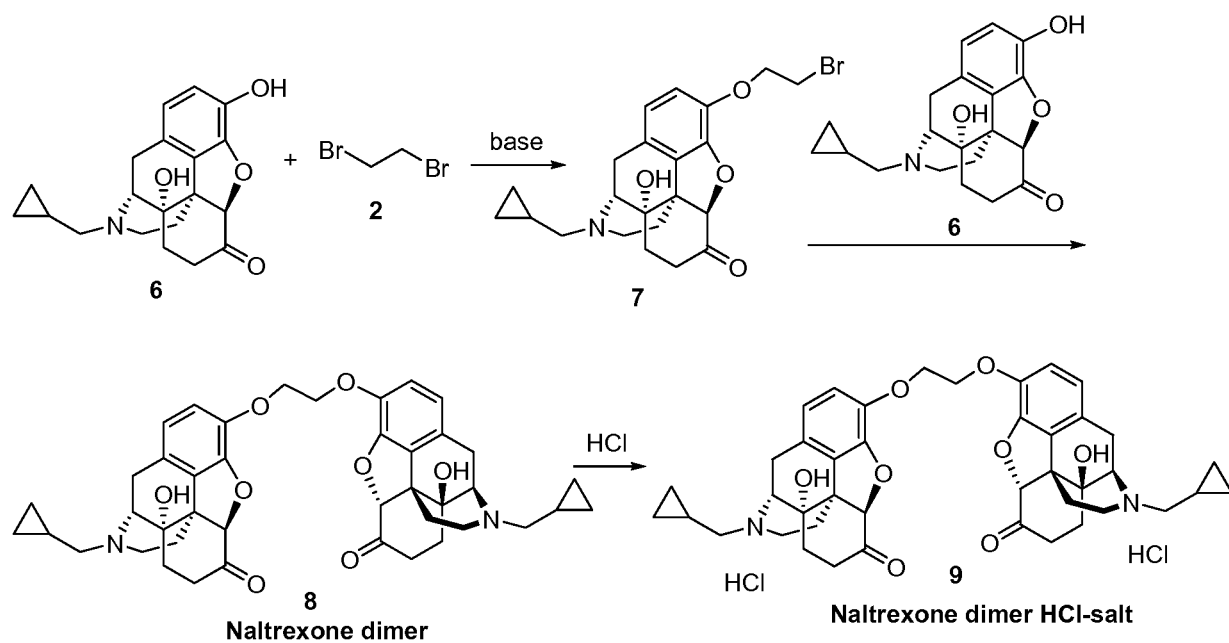
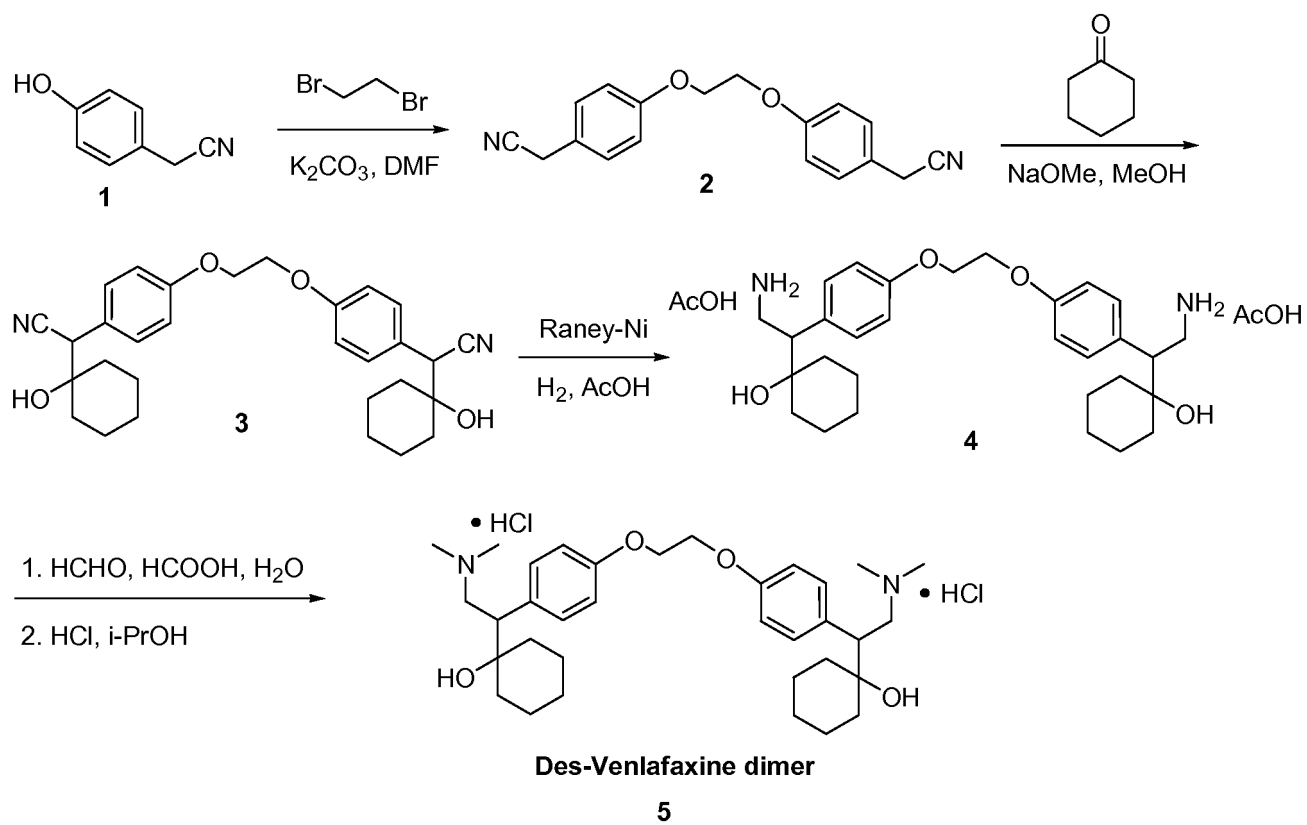
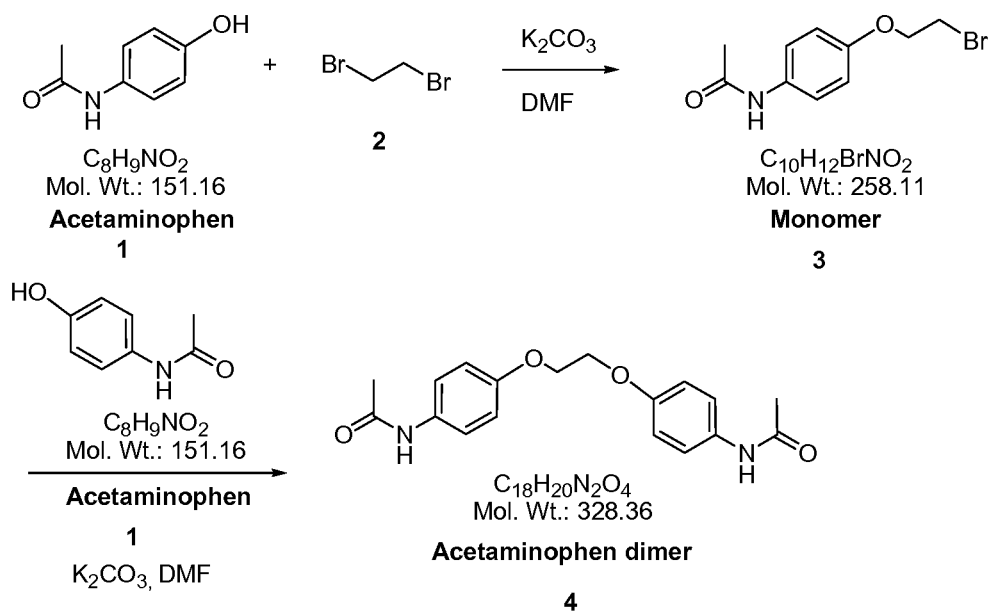
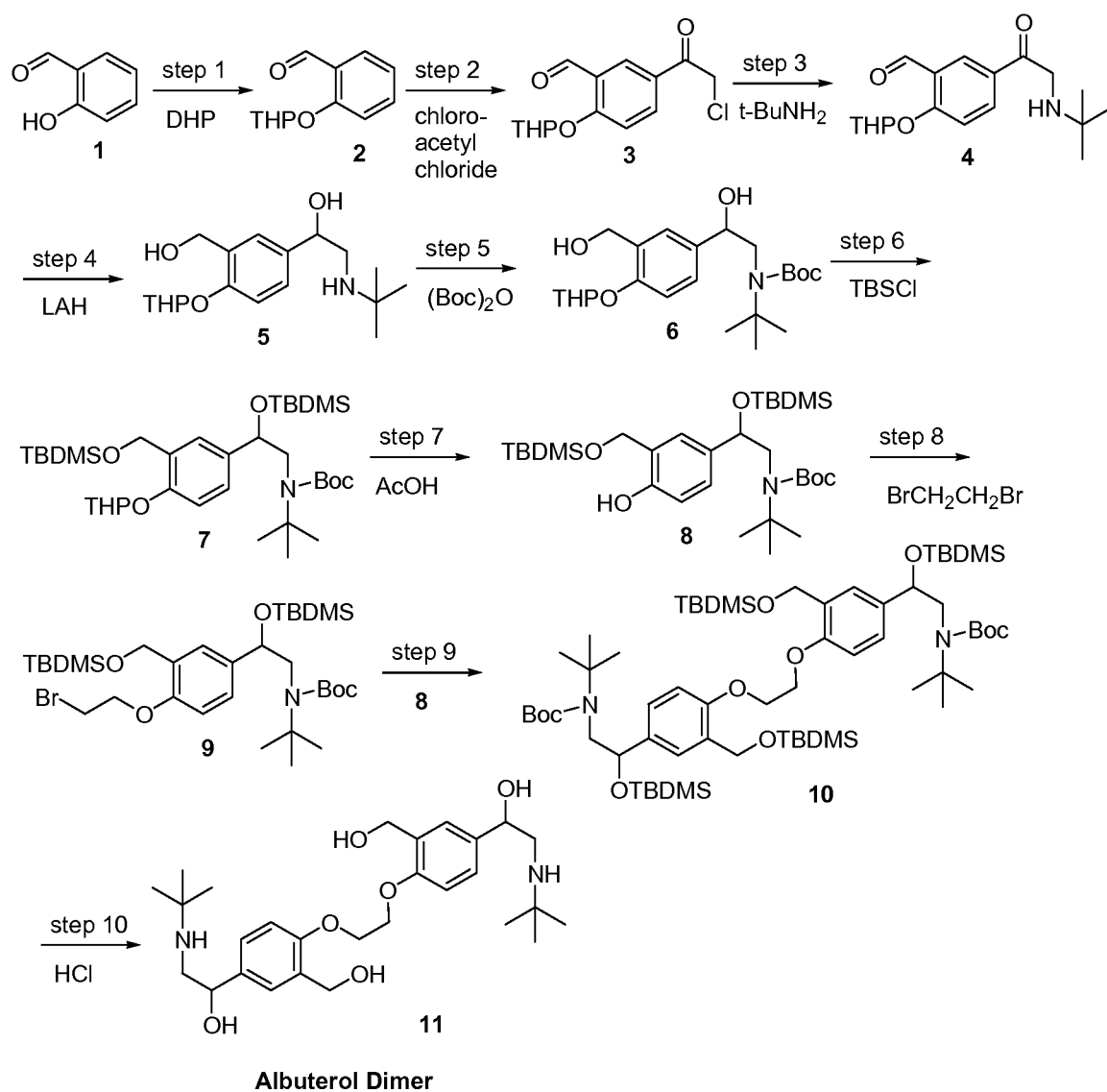
FIGURE 3**Synthesis of the Naltrexone Dimer HCl Salt**

FIGURE 4**Synthesis of the Des-venlafaxine HCl Salt**

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Figure 5**Synthesis of the Acetaminophen Dimer**

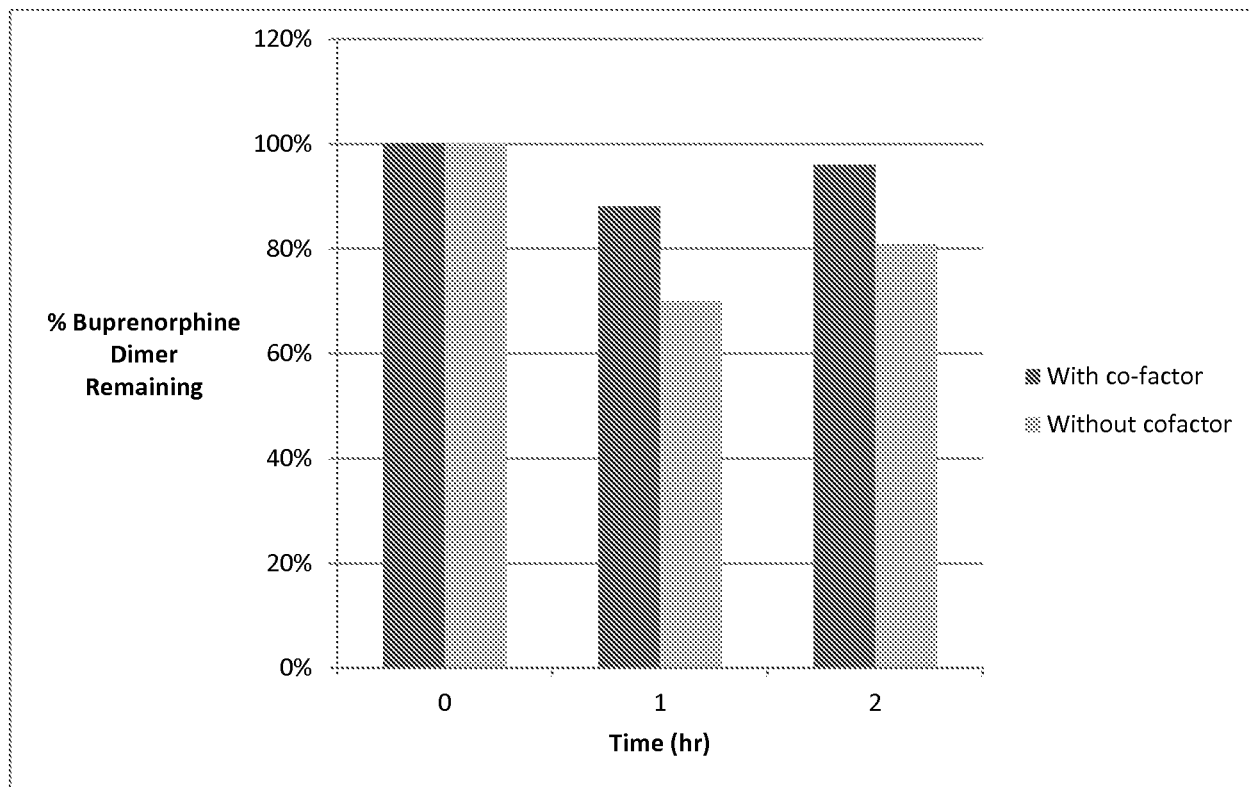
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FIGURE 6**Synthesis of the Albuterol Dimer**

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Figure 7

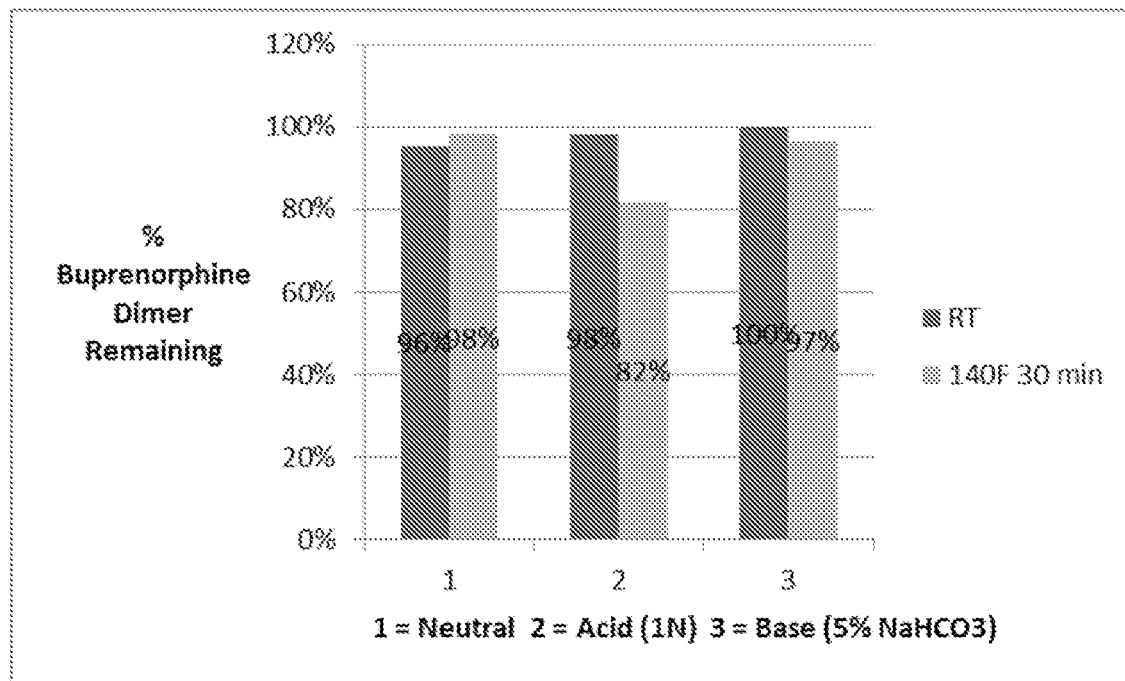
Stability of the buprenorphine dimer when exposed to CYP enzymes in the presence and absence of a cofactor



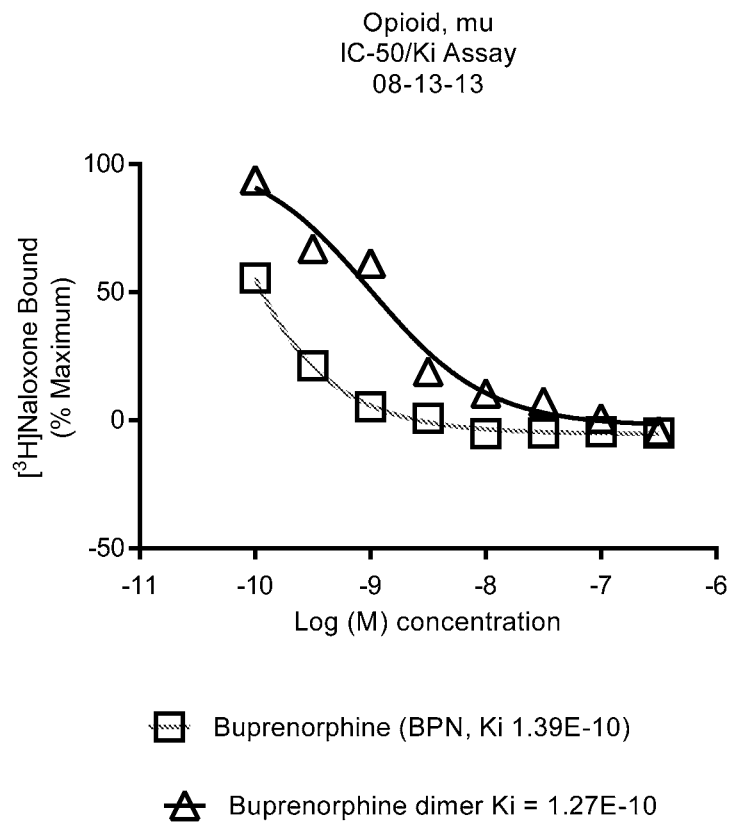
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Figure 8

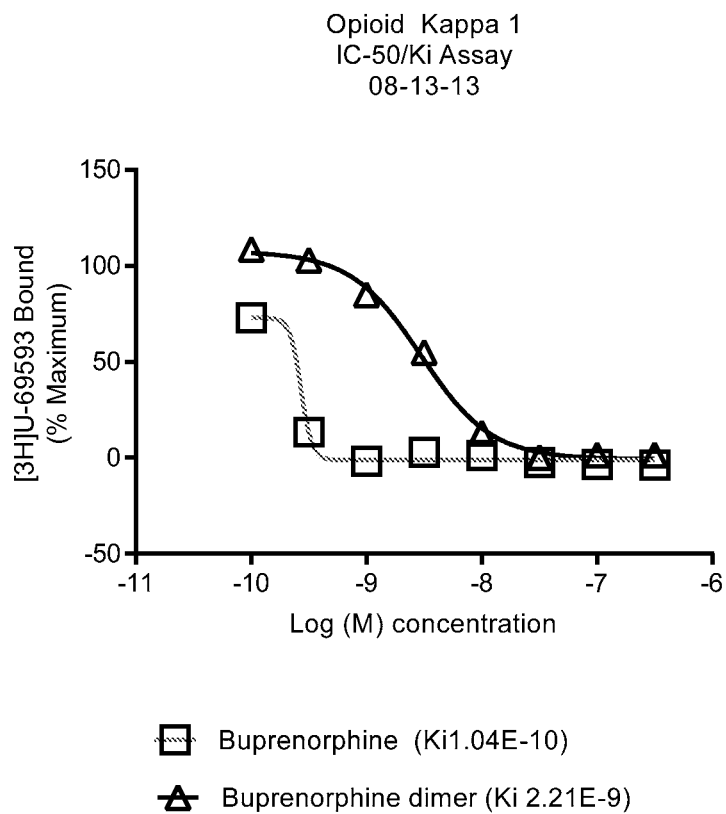
Stability of the buprenorphine dimer to aqueous conditions, as well as acidic and basic condition, each at room temperature and at 140°F for the indicated period of time.



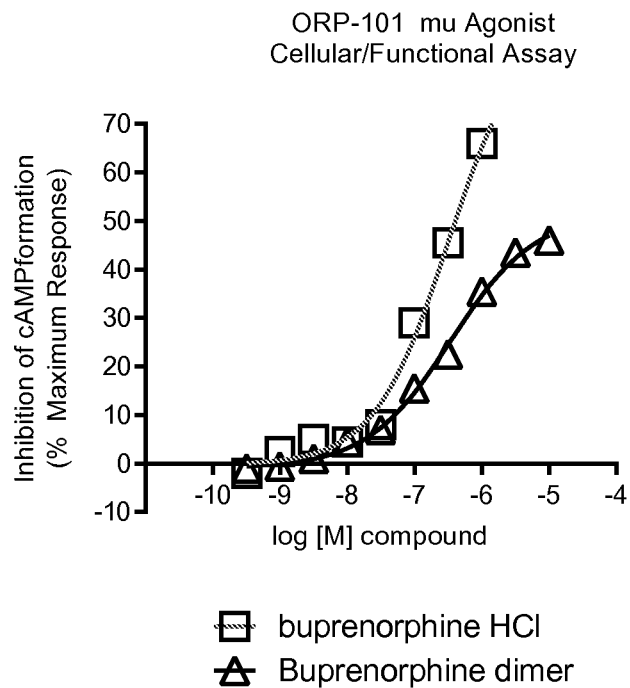
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Figure 9Results of buprenorphine dimer receptor binding experiments – μ receptor

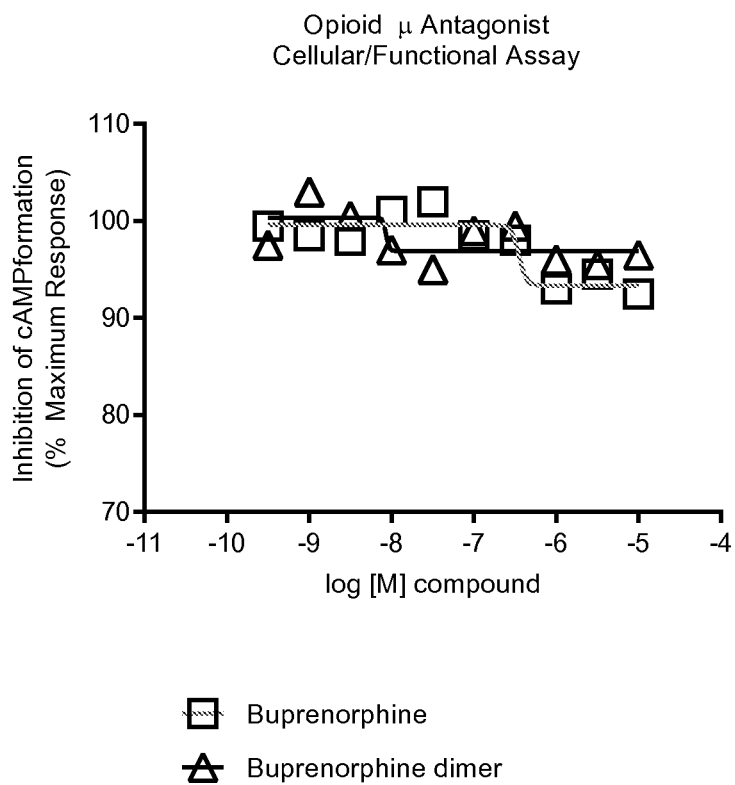
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Figure 10Results of buprenorphine dimer receptor binding experiments – κ receptor

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Figure 11 μ agonist functional assay results for the buprenorphine dimer

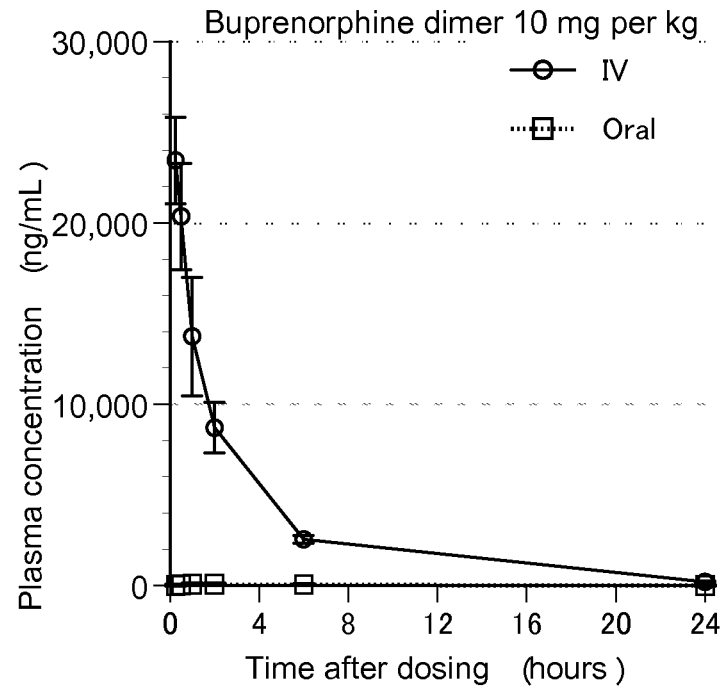
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Figure 12 μ antagonist functional assay results for the buprenorphine dimer

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Figure 13

Results of oral and IV bioavailability of the buprenorphine dimer



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Figure 14

Stress-induced fecal output of male CD-1 mice

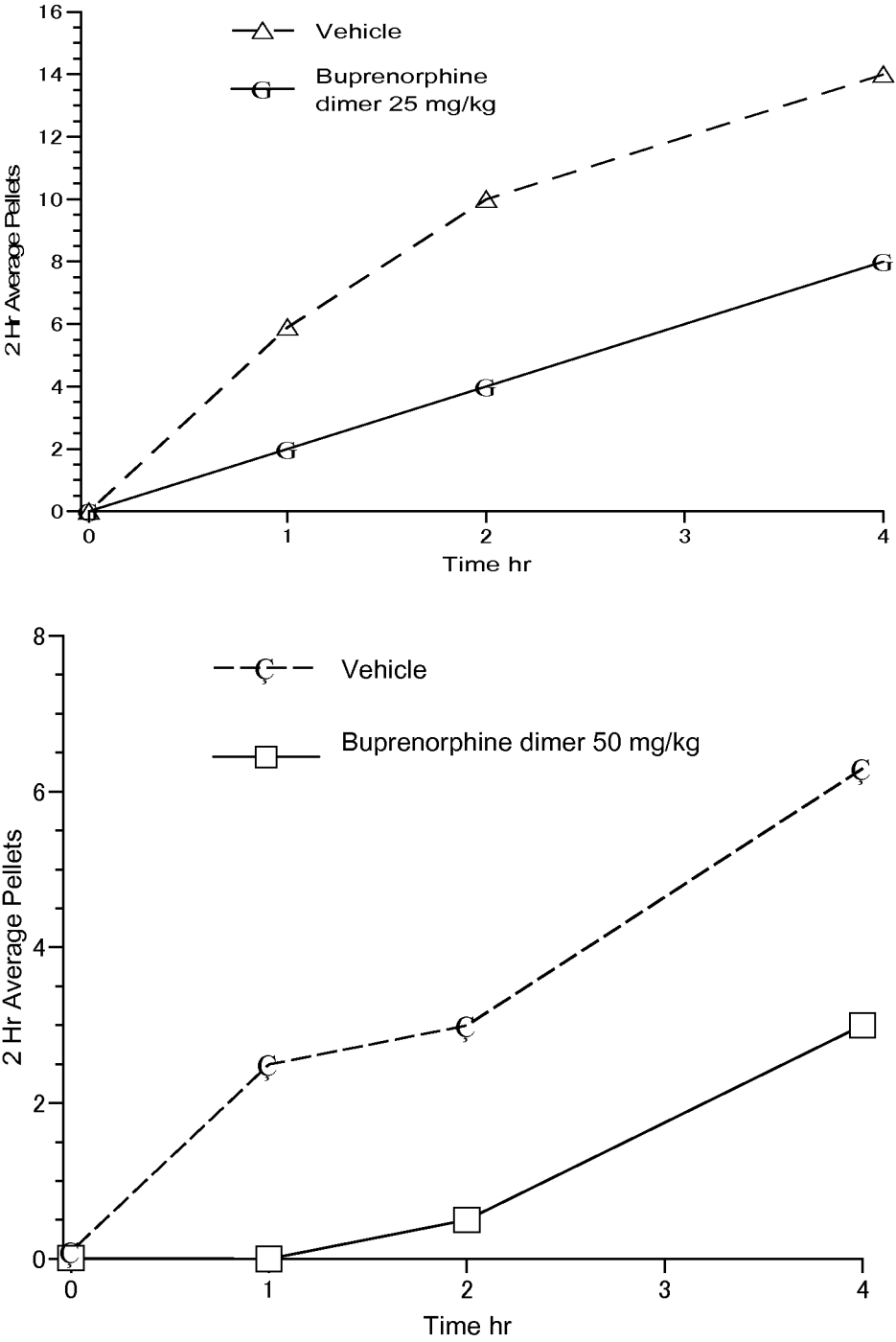
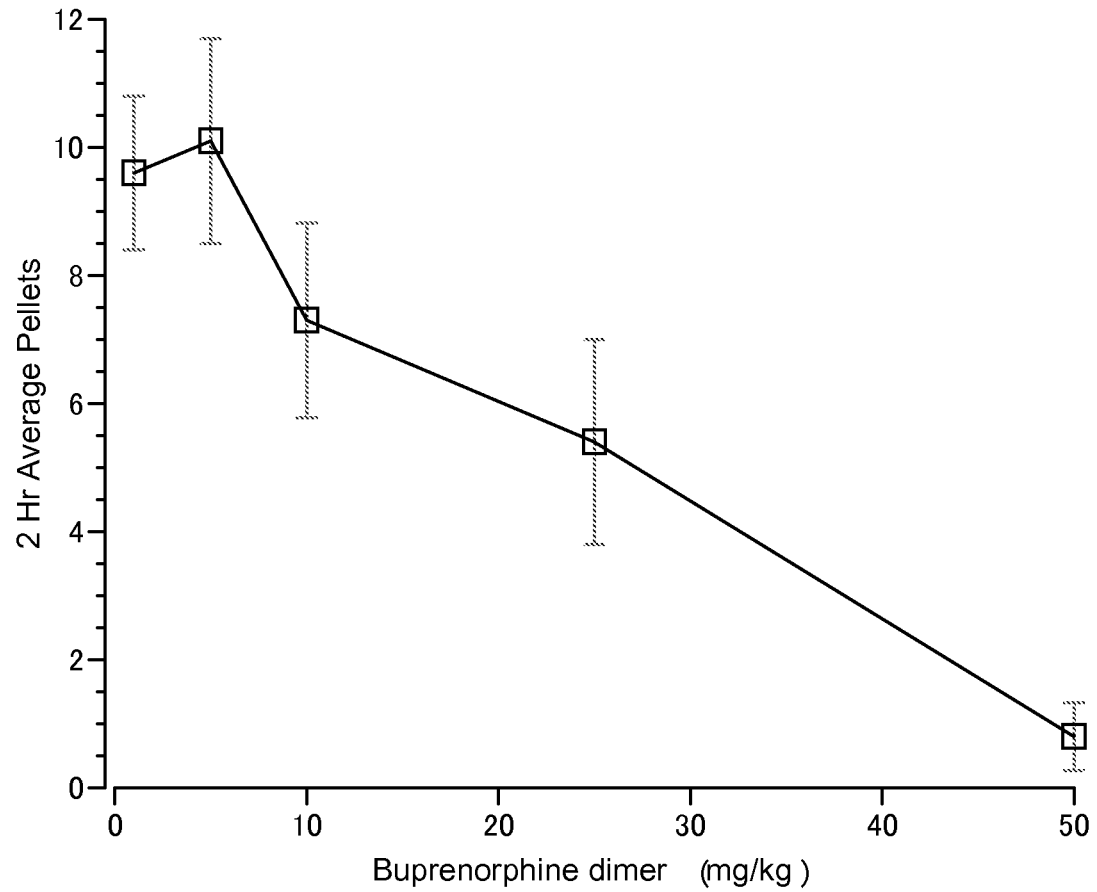


Figure 15

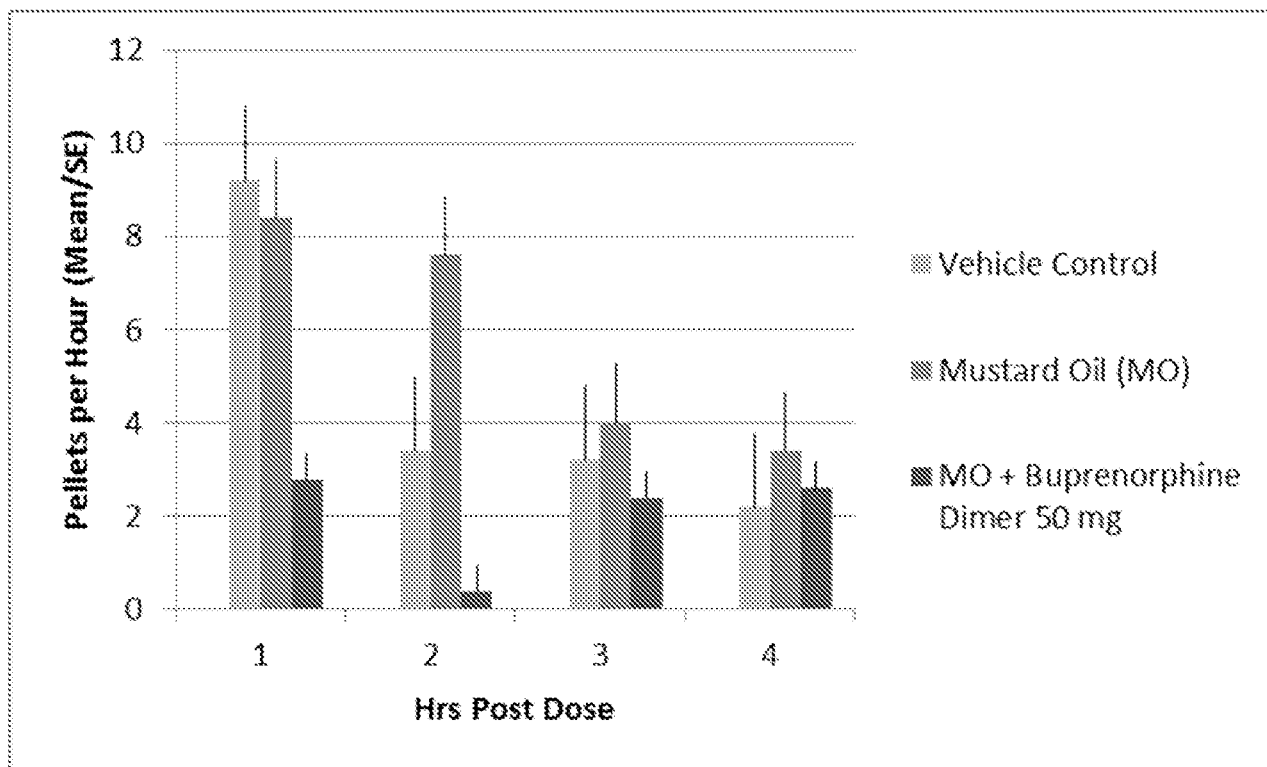
Buprenorphine dimer decreases fecal output in a dose-dependent manner



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Figure 16

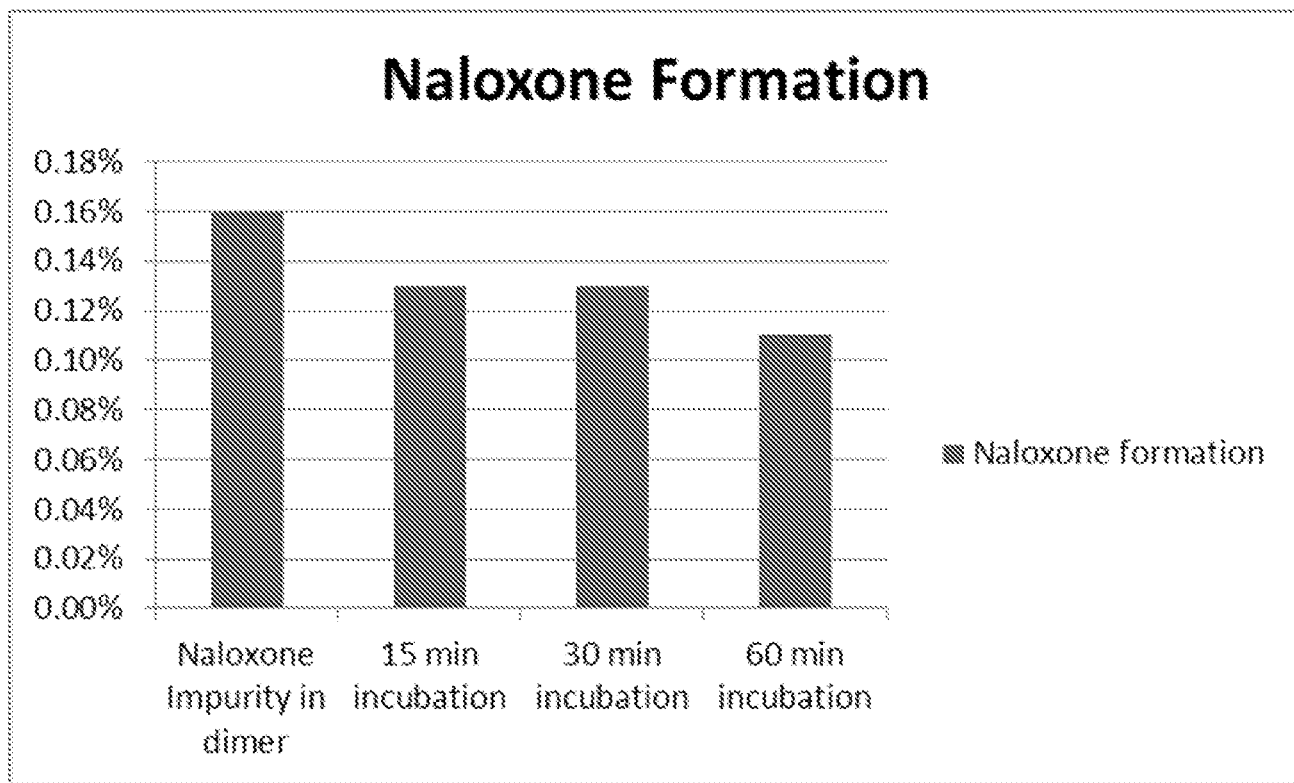
Effect of the buprenorphine dimer on gastrointestinal motility in post inflammatory models



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Figure 17

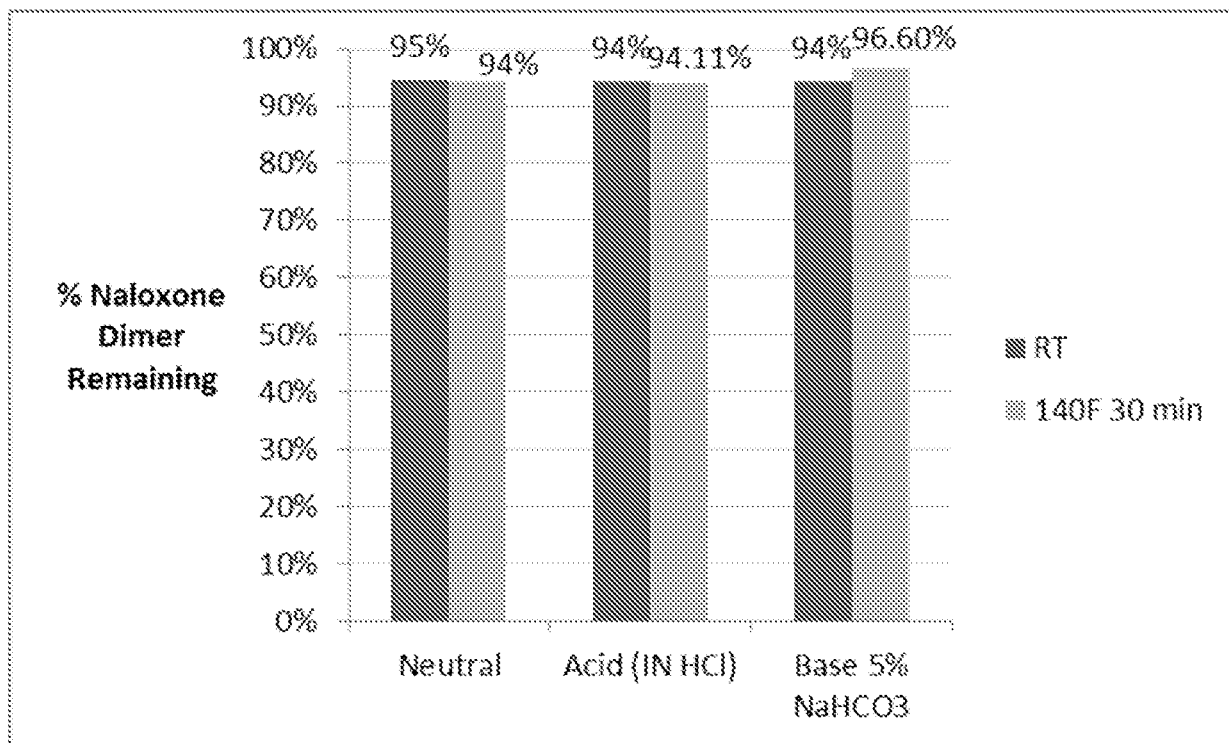
Lack of release or formation of naloxone when the naloxone dimer is incubated with human microsomes



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Figure 18

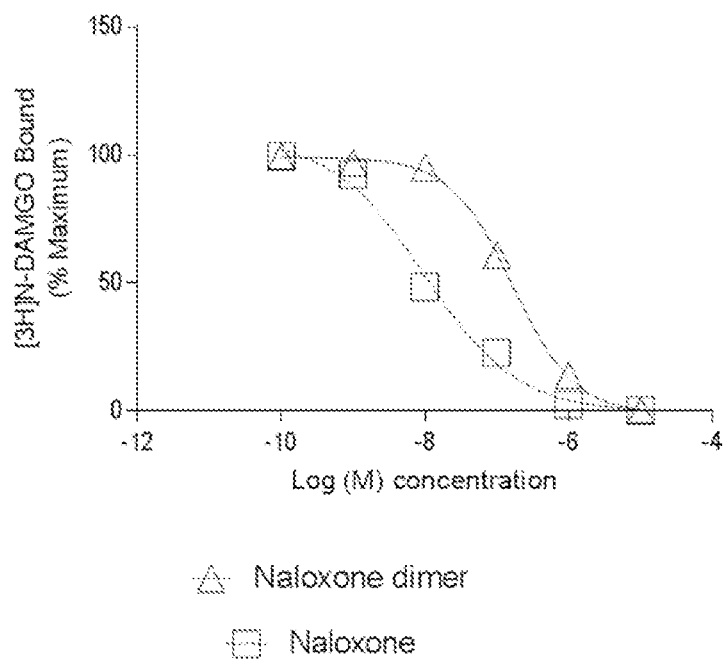
Stability of the naloxone dimer salt to aqueous conditions, as well as acidic and basic condition, each at room temperature and at 140°F for the indicated period of time.



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Figure 19

Results of the human μ opioid receptor binding assay of the naloxone dimer and naloxone



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Figure 20

Results of the naloxone dimer salt in alleviating loperamide-induced constipation in mice

