

FIGURE 1

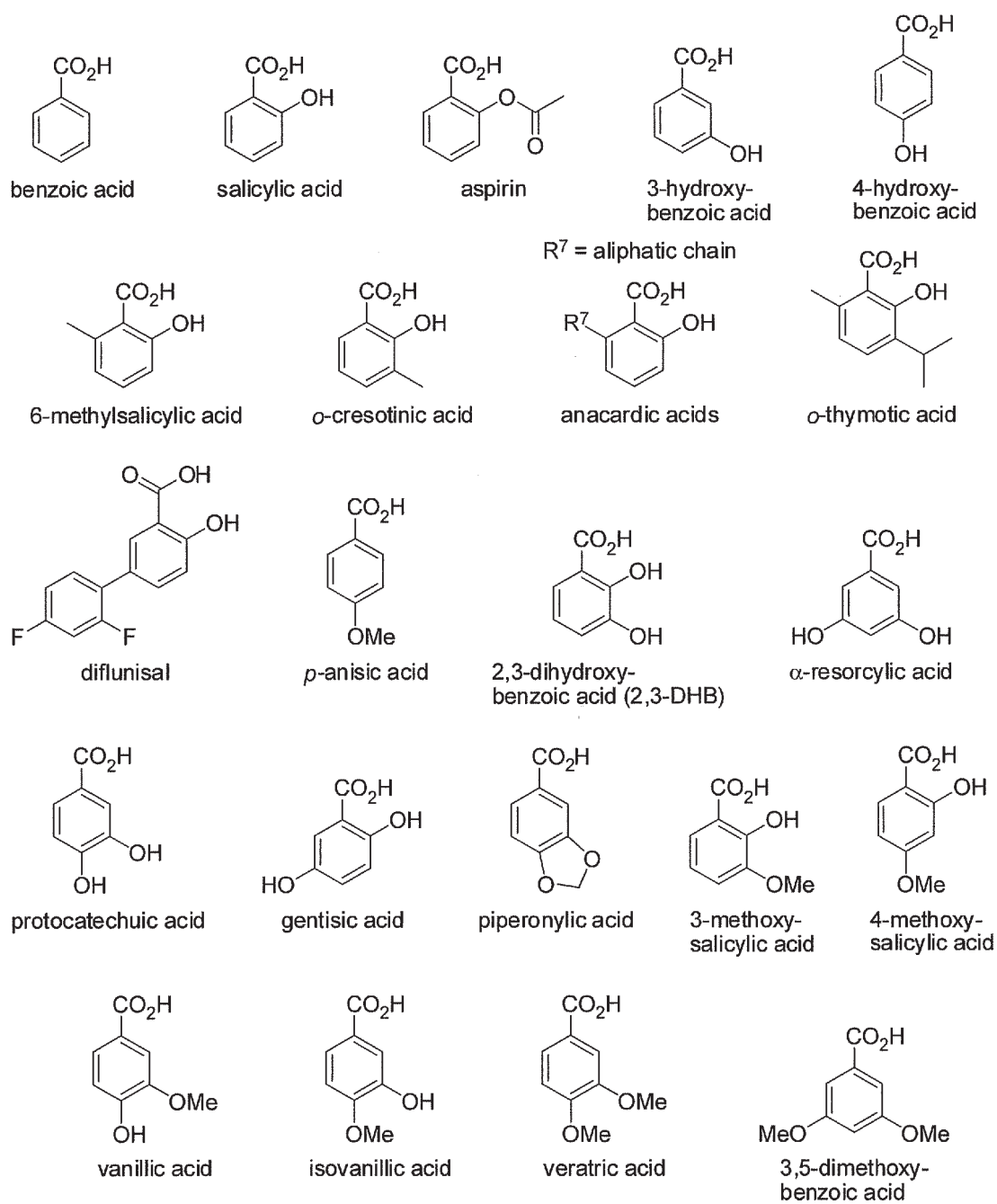
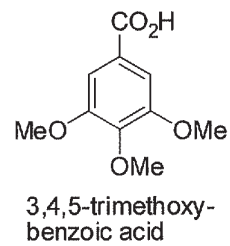
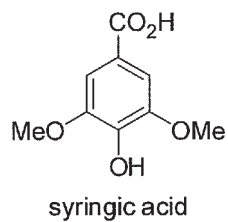
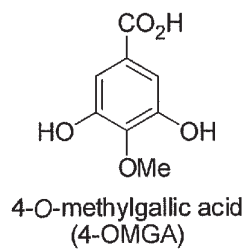
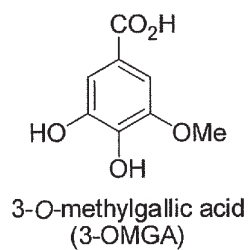
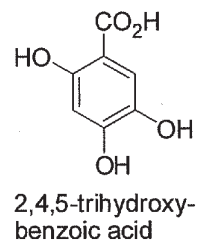
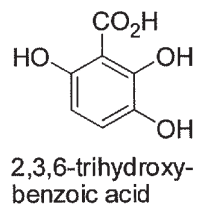
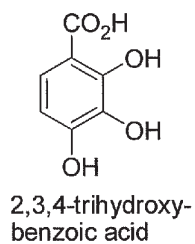
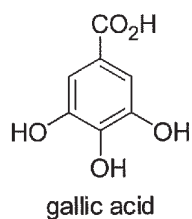


FIGURE 1 (Continued)



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FIGURE 2

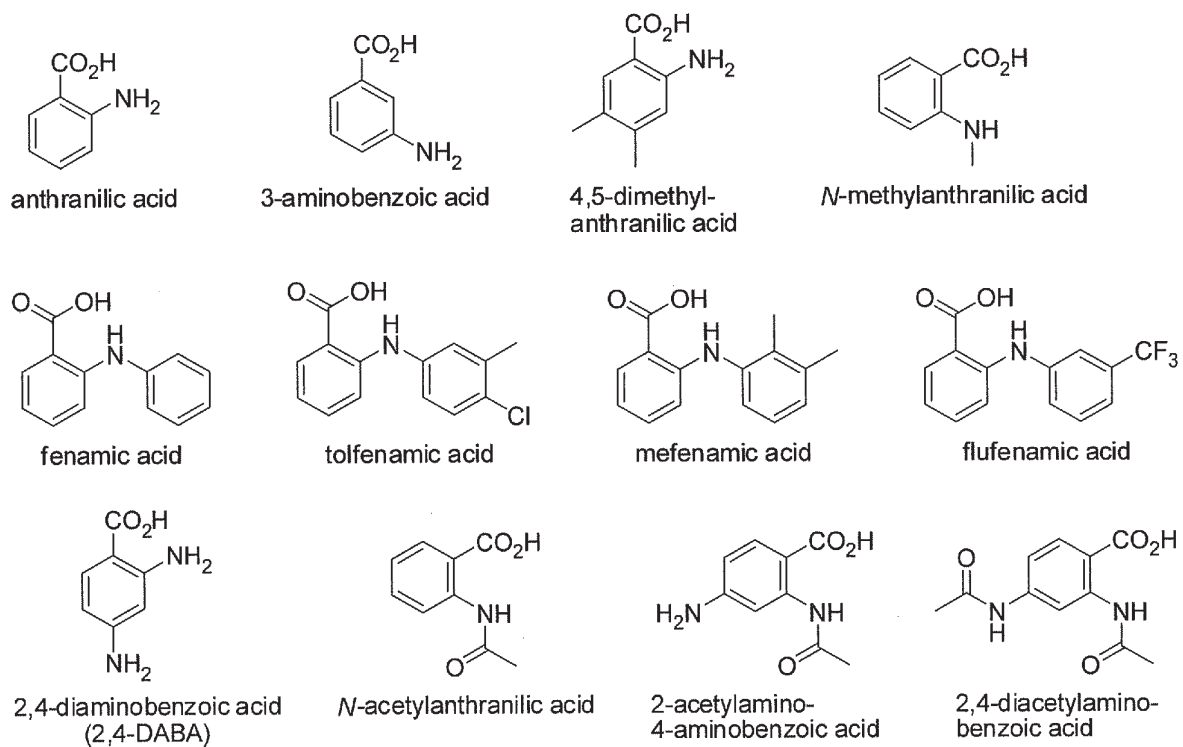
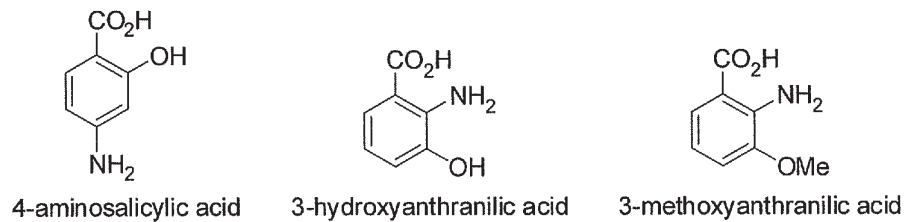


FIGURE 3



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FIGURE 4

4A. Common hydrocodone products and dosage ranges

Second API		Hydrocodone Bitartrate
Name	Strength	Strength ^a
acetaminophen	300 mg	5 mg
		7.5 mg
		10 mg
	325 mg	5 mg
		7.5 mg
		10 mg
	400 mg	5 mg
		7.5 mg
		10 mg
	500 mg	2.5 mg
		5 mg
		7.5 mg
		10 mg
	650 mg	7.5 mg
	660 mg	10 mg
		10 mg
	750 mg	7.5 mg
		10 mg
ibuprofen	200 mg	2.5 mg
		7.5 mg
		10 mg
aspirin	500 mg	2.5 mg
		5 mg
		7.5 mg
chlorpheniramine maleate	2 mg	5 mg
	4 mg	
	8 mg	10 mg
phenylpropanolamine hydrochloride	12.5 mg	2.5 mg
	25 mg	5 mg
phenylephrine hydrochloride	5 mg	1.66 mg
	10 mg	3.75 mg
pseudoephedrine hydrochloride	60 mg	5 mg
phenylephrine hydrochloride	5 mg	1.66 mg
		3.75 mg
guaifenesin	100 mg	5 mg
	300 mg	

FIGURE 4 (continued)

4B. Common hydrocodone products and dosage ranges (continued)

Hydrocodone Bitartrate Strength ^a	Second API		Third API	
	Name	Strength	Name	Strength
5 mg	homatropine methylbromide	1.5 mg	na	
2.5-10 mg	acetaminophen	300-750 mg	na	
2.5-10 mg	ibuprofen	200 mg	na	
5-10 mg	chlorpheniramine maleate	4-8 mg	na	
2.5-7.5 mg	aspirin	500 mg	na	
2.5-5 mg	phenylpropanolamine hydrochloride	12.5-25 mg	na	
1.66-3.75 mg	phenylephrine hydrochloride	5-10 mg	na	
5 mg	pseudoephedrine hydrochloride	60 mg	na	
5 mg	guaifenesin	100-300 mg	na	
1.66-3.75 mg	phenylephrine hydrochloride	5 mg	pyrilamine maleate	8.33 mg
5 mg	chlorpheniramine maleate	2 mg	pseudoephedrine hydrochloride	30 mg

^aDoses of hydrocodone prodrugs of this invention can be calculated from hydrocodone bitartrate (conversion formula was listed in previous invention disclosure document).

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FIGURE 5

Oral PK Profiles (HC)
Bz-HC vs. YYFFI-HC vs. Diglycolate-HC

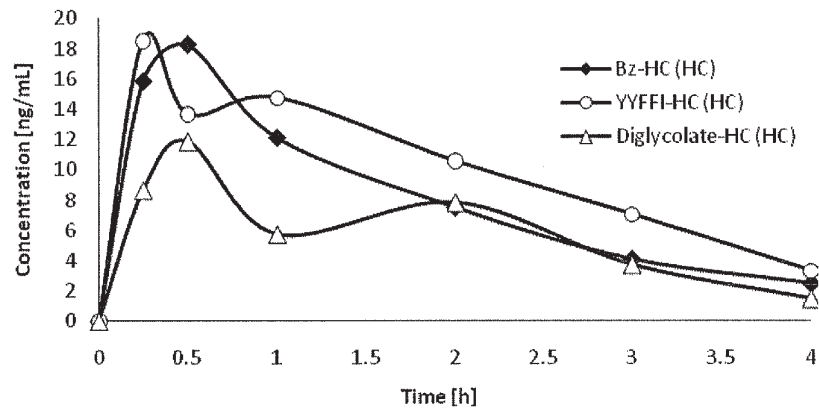
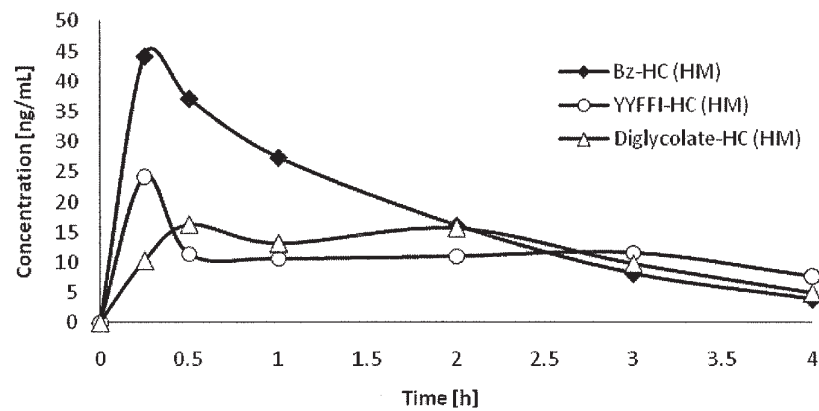


FIGURE 6

Oral PK Profiles (HM)
Bz-HC vs. YYFFI-HC vs. Diglycolate-HC



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FIGURE 7

Intranasal PK Profiles (HC)
Bz-HC vs. Adipate-HC

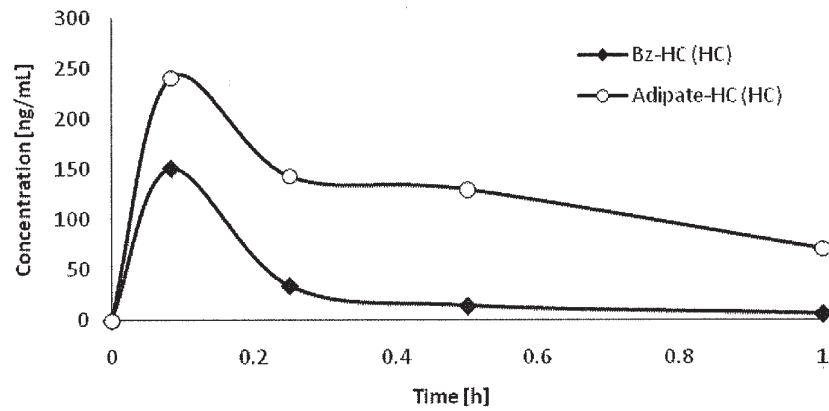
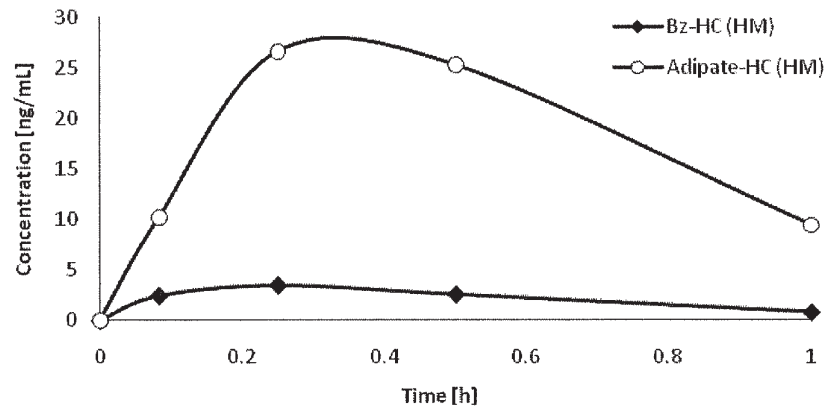


FIGURE 8

Intranasal PK Profiles (HM)
Bz-HC vs. Adipate-HC



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FIGURE 9

Oral PK Profiles (HC)
Bz-HC vs. Nicotinate-HC vs. Hydrocodone-BT

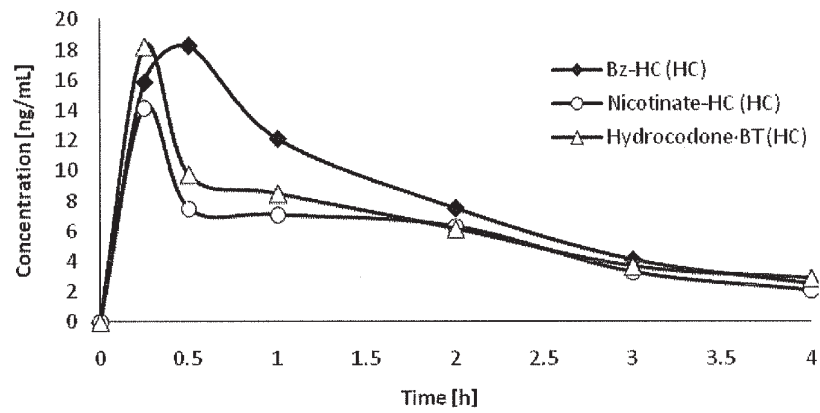
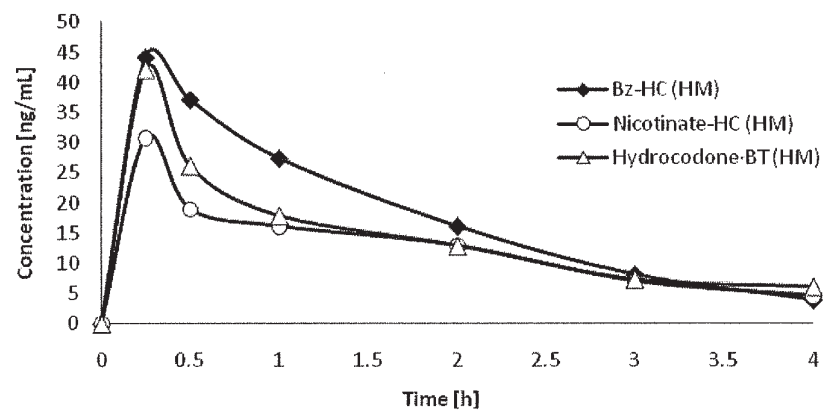


FIGURE 10

Oral PK Profiles (HM)
Bz-HC vs. Nicotinate-HC vs. Hydrocodone-BT



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FIGURE 11

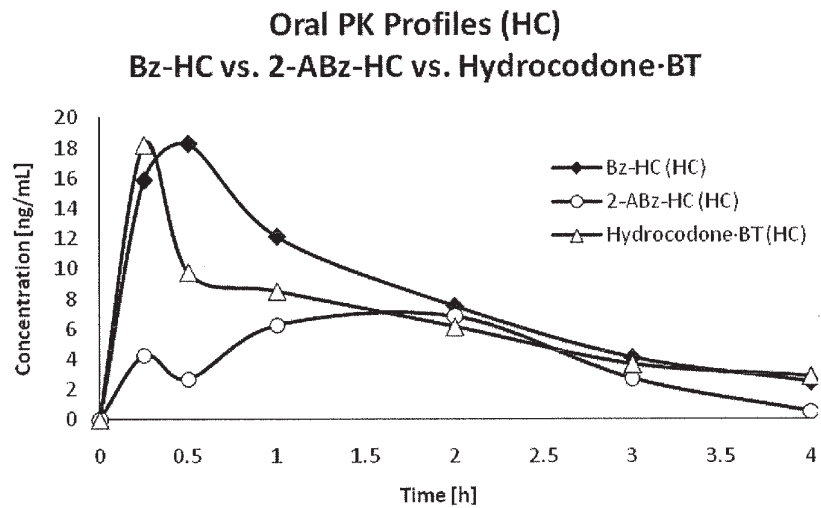
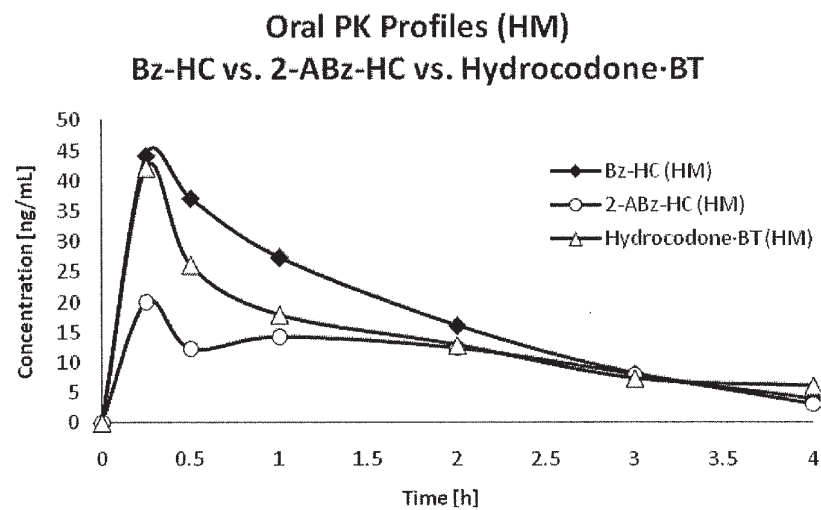
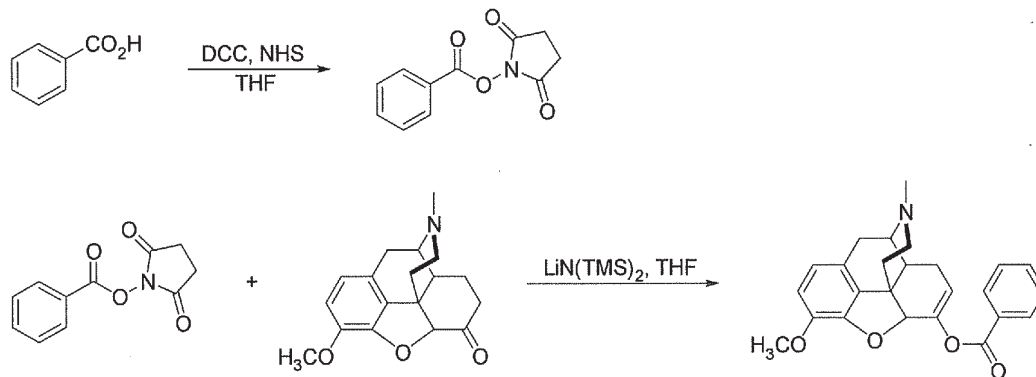
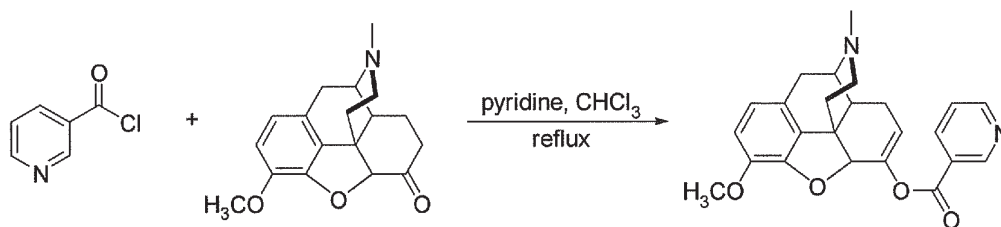


FIGURE 12



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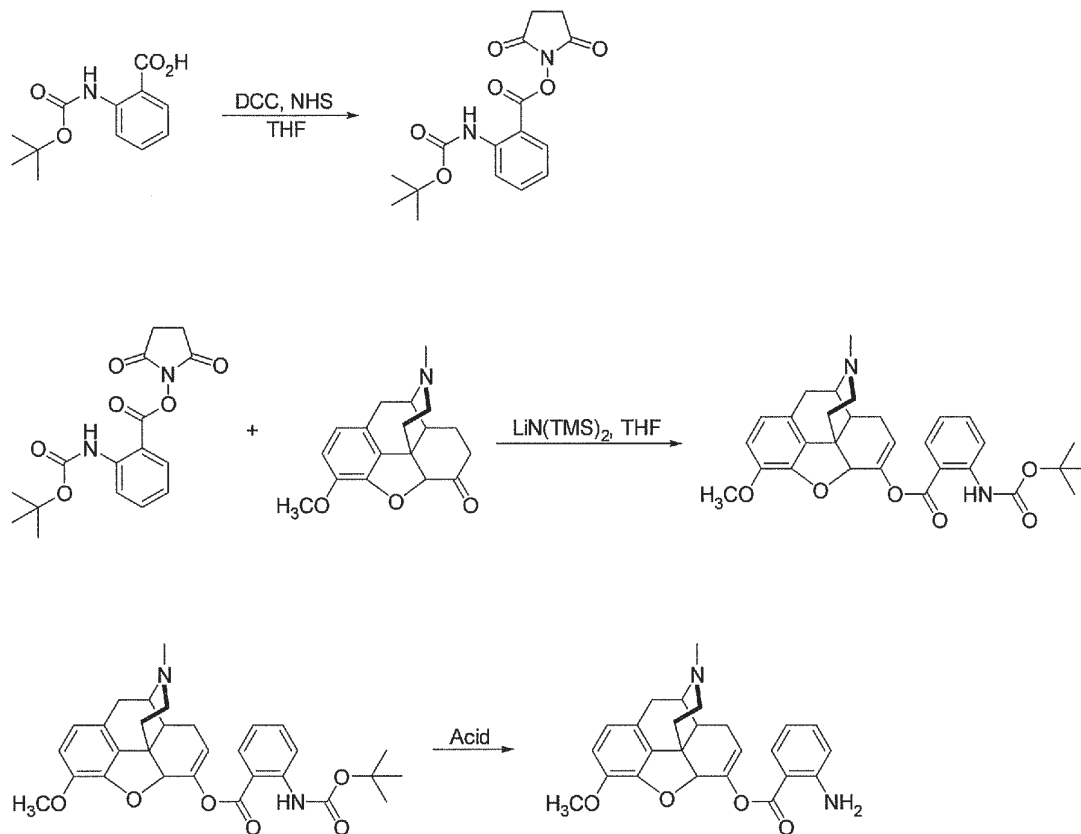
FIGURE 13

13A. Synthesis of Benzoate-Hydrocodone**13B. Synthesis of Nicotinate-Hydrocodone**

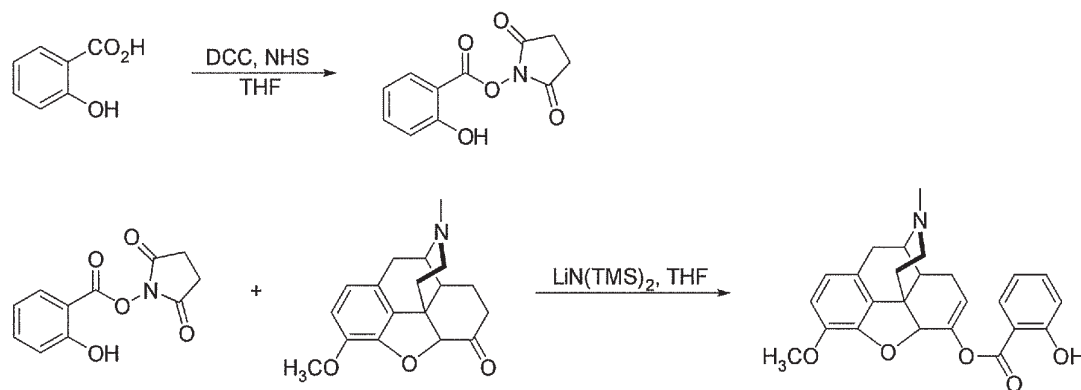
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FIGURE 13 (Continued)

13C. Synthesis of 2-Aminobenzoate-Hydrocodone



13D. Synthesis of Salicylate-Hydrocodone



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FIGURE 14

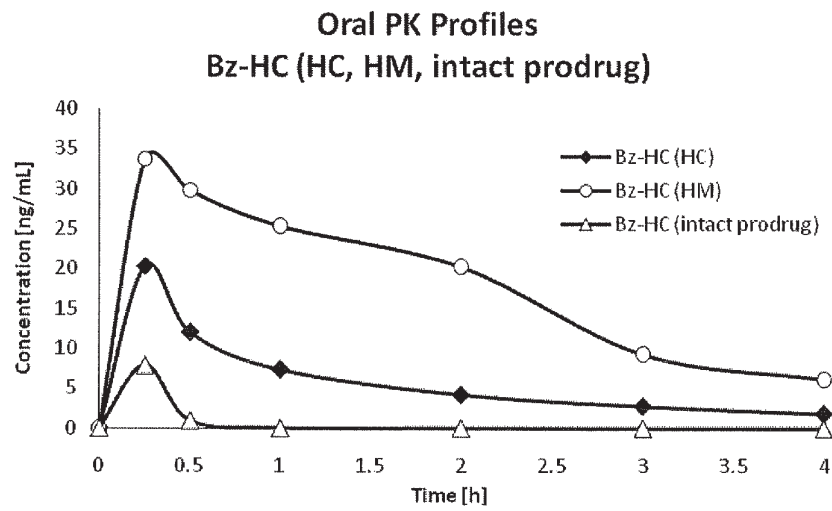
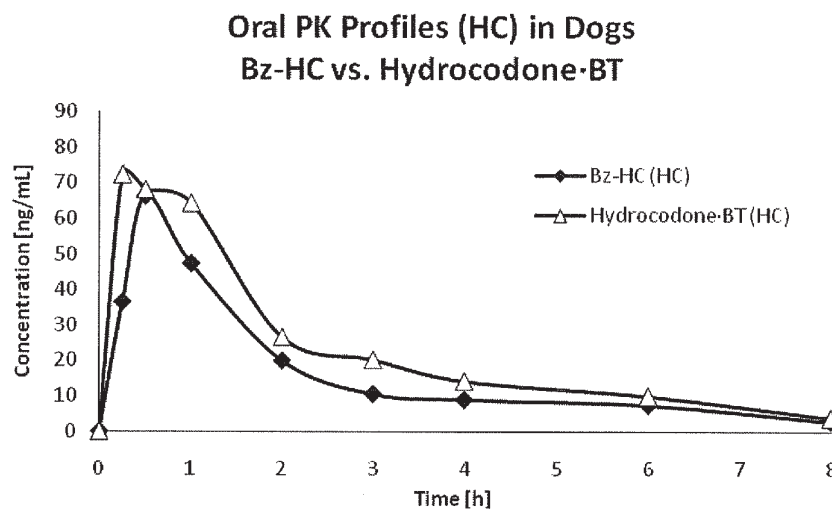


FIGURE 15



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FIGURE 16

Oral PK Profiles (HM) in Dogs
Bz-HC vs. Hydrocodone-BT

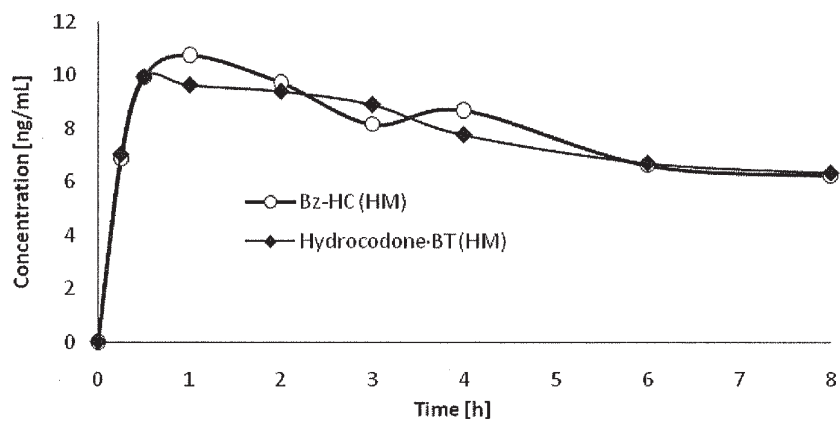
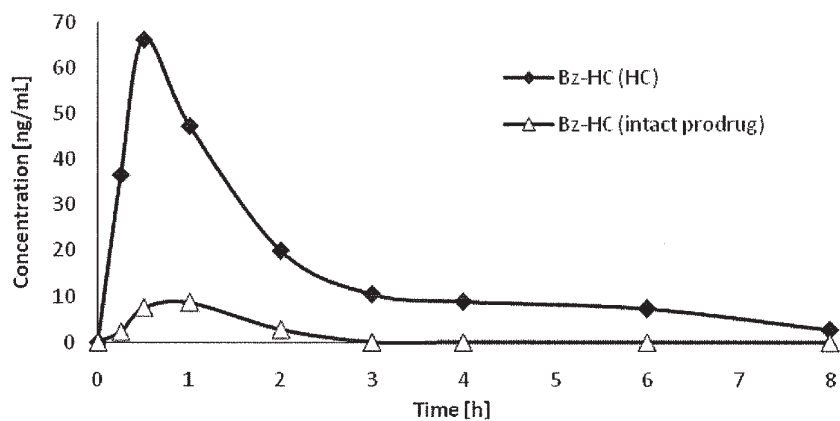


FIGURE 17

Oral PK Profiles in Dogs
Bz-HC (HC , intact prodrug)



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FIGURE 18

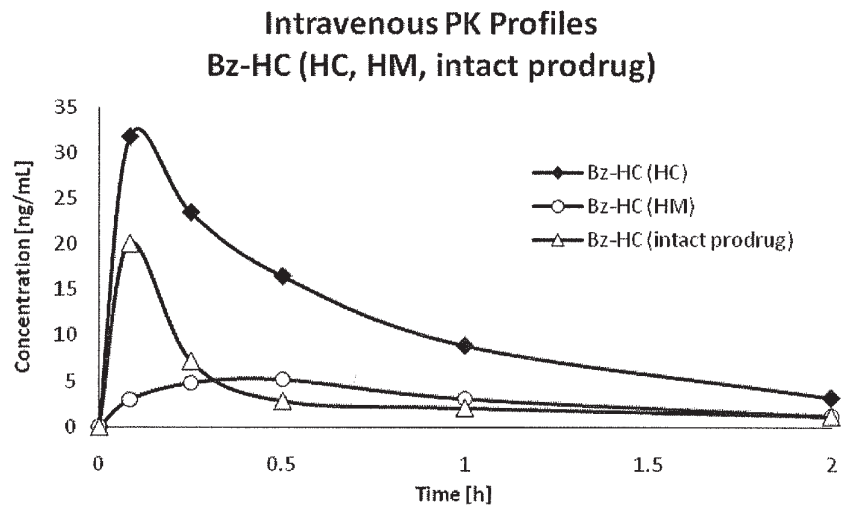
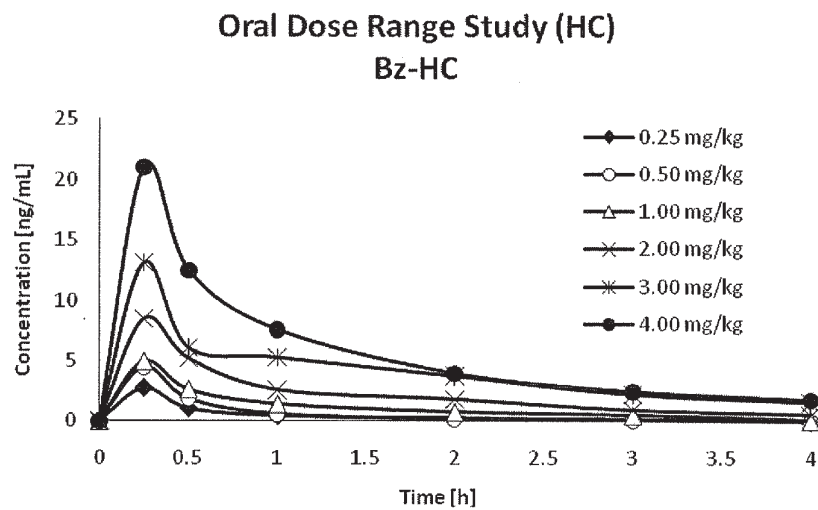


FIGURE 19



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FIGURE 20

Oral Dose Range Study (HM)
Bz-HC