

**Table S1** List of antitussives and expectorants used in this analysis

ATC code	Component code	Component name
R05CB01	101830AGN, 101842AGN, 101843AGN, 101801ACH, 101804ACH, 101807ATB	Acetylcysteine 0.2g (0.2 g/g), 20 g (0.2 g/g), 40 g (0.2 g/g), 0.1 g, 0.2 g, 0.6 g
R05CB06	106301ATB	Ambroxol hydrochloride 30 mg
R03DA08	113801ATB	Bamiphylline hydrochloride 0.3 g
R05DB01	115801ACS	Benzonatate 0.1 g
R05CB02	118601ATB	Bromhexine hydrochloride 8 mg
R05CB03	123801ACH, 123804ACH	L-carbocysteine 0.5 g, 0.375 g
R05CA12	150034ASY, 150032ASY, 150033ASY, 150007ATB	Ivy leaf 70% ethanol fluid ext. 0.1 g (20 mg/mL) Ivy leaf 30% ethanol dried ext. (5–7.5→1) 35 mg (7 mg/mL), 52.5 mg (7 mg/mL) Ivy leaf 30% ethanol dried ext. (5–7.5→1) (as hederacoside C 2.5 mg) 25 mg
R05CB15	153130ASY, 153101ACH, 153101ATB	Erdosteine 1.75 g (35 mg/mL), 0.3g
R03CC04	157901ATB	Fenoterol hydrobromide 2.5 mg
R03CC	163130ASY, 163101ATB, 163104ATB	Formoterol fumarate hydrate 4 mg (40 µg/g), 20 µg, 40µg
R06AX17	180140ASY, 180101ATB	Ketotifen fumarate [as ketotifen 20 mg (0.2 mg/mL), 1 mg]
R05DB27	183131ASY, 183102ACH, 183102ATB, 183103ATR	Levodropropizine 60 mg (6 mg/mL), 60 mg, 90 mg
R05CB	192401ATB	Methyl-N, S-diacetylcysteine 0.2 g
R03DX	207701ATB	Ozagrel hydrochloride 0.2 g
R03CC08	218301ATB, 218302ATB	Procaterol hydrochloride 25 µg, 50 µg
R03CC02	225501ATB, 225503ACR, 225503ATB, 225507ACR	Salbutamol sulfate (as salbutamol 2 mg, 4 mg, 8 mg)
R05CB07	228201ACH, 228202ACH	Sobrerol 0.1 g, 0.2 g
R03DA04	237001ACR, 237003ACR, 237003ATR, 237005ATR	Theophylline 0.1 g, 0.2 g, 0.4 g
R06AX	242601ACH	Tranilast 0.1 g
R03CC63	532100ASY, 264800ATB	Ambroxol hydrochloride 1.5 g (1.5 mg/mL), 30 mg
R05FA02	266500ATB	Dextromethorphan hydrobromide 20 mg
R05	267400ATB	Caffeine anhydrous 10 mg
R05FA	532800ASY, 268000ATB	Chlorpheniramine maleate 0.15 g (0.15 mg/mL), 1.5 mg
R05DB21	429030ASS	Levocloperastine fendizoate [as cloperastine hydrochloride 32 mg (4 mg/mL)]
R03DA11	439101ATB	Doxofylline 0.4 g
R03DA07	503301ACH	Theobromine 0.3 g
R05FA02	532500ASY	Ammonium chloride 0.2 g (10 mg/mL)
R05CB10	532900ASY	Acetylcysteine 0.2 g (20 mg/mL)
R05CA	533400ASY, 533500ASY	Coptis rhizome butanol dried ext. (4.5–7→1) 8.75 mg (0.875 mg/mL), 13.125 mg (0.875 mg/mL)

Table S1 (continued)

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ATC code	Component code	Component name
R05CB01	101834CLQ	Acetylcysteine 0.8 g (0.2 g/mL)
R03BA02	119533CSI, 119530CSI, 119531CSI	Budesonide (micronized) 0.5 mg (0.25 mg/mL), 20 mg (0.2 mg per dose), 40 mg (0.2 mg per dose)
R03BA05	162233CSI, 162235CSI, 162236CSI, 162231CSS, 162232CSI	Fluticasone propionate 6 mg (0.1 mg per dose), 15 mg (0.25 mg per dose), 30 mg (0.25 mg per dose), 2 mg (1 mg/mL), 6 mg (50 µg per dose)
R03BB01	177131CLQ	Ipratropium bromide monohydrate 0.5 mg (0.25 mg/mL)
R03AC16	218330CSI	Procaterol hydrochloride(micronized) 2 mg (10 µg per dose)
R03AC02	225531CSI, 225530CSI, 225532CSI	Salbutamol sulfate [as salbutamol 20 mg (0.1 mg per dose), 2.5 mg (1 mg/mL), 0.1 g (5 mg/mL)]
R03CC11	452101CPC, 452102CPC, 452103CPC	Tulobuterol 0.5 mg, 1 mg, 2 mg
R03BA08	497131CSI, 497130CSI	Ciclesonide 9.6 mg (0.16 mg per dose), 4.8 mg (80 µg per dose)
R03BA09	500431CSI, 500432CSI	Fluticasone furoate (micronized) 3 mg (0.1 mg per dose), 6 mg (0.2 mg per dose)
R03AK06	543400CSI, 543100CSI, 543300CSI, 543600CSI, 544400CSI, 543500CSI, 543200CSI	Fluticasone propionate 15 mg (0.125 mg per dose), 6 mg (0.1 mg per dose), 15 mg (0.25 mg per dose), 30 mg (0.25 mg per dose), 7 mg (0.25 mg per dose), 30 mg (0.5 mg per dose), 6 mg (50 µg per dose)
R03AK07	543800CSI, 543900CSI, 544100CSI, 544000CSI	Budesonide (micronized) 9.6 mg (0.16 mg per dose), 19.2 mg (0.16 mg per dose), 19.2 mg (0.32 mg per dose), 4.8 mg (80 µg per dose)
R03AK08	544200CSI	Beclomethasone dipropionate 12 mg (0.1 mg per dose)
R05DA04	137703ATB	Codeine phosphate 20 mg

ATC, anatomical therapeutic chemical; ext., extract.

**Table S2** Differences in prescription rates of antitussives and expectorants by institution

Drug components	Acute cough, n (%)				Chronic cough, n (%)			
	General hospital (n=39,757)	Secondary hospital (n=60,713)	Clinic (n=1,270,685)	Others (n=9,401)	General hospital (n=7,057)	Secondary hospital (n=1,296)	Clinic (n=15,541)	Others (n=259)
Expectorants, excl. combinations with cough suppressants	17,619 (44.3)	27,340 (45.0)	570,020 (44.9)	4,146 (44.1)	2,750 (39.0)	531 (41.0)	6,147 (39.6)	79 (30.5)
Cough suppressants and expectorants, combinations	11,357 (28.6)	21,286 (35.1)	362,787 (28.6)	3,016 (32.1)	607 (8.6)	210 (16.2)	3,219 (20.7)	60 (23.2)
Cough suppressants, excl. combinations with expectorants	4,113 (10.3)	6,023 (9.9)	194,471 (15.3)	1,741 (18.5)	538 (7.6)	111 (8.6)	1,521 (9.8)	29 (11.2)
Other systemic drugs for obstructive airway diseases	3,111 (7.8)	1,575 (2.6)	36,210 (2.8)	192 (2.0)	2,126 (30.1)	284 (21.9)	2,370 (15.2)	45 (17.4)
Adrenergics, inhalants	1,599 (4.0)	371 (0.6)	5,941 (0.5)	22 (0.2)	543 (7.7)	39 (3.0)	284 (1.8)	0 (0.0)
Cough and cold preparations	1,004 (2.5)	2,656 (4.4)	59,494 (4.7)	195 (2.1)	43 (0.6)	25 (1.9)	690 (4.4)	2 (0.8)
Other drugs for obstructive airway diseases, inhalants	489 (1.2)	210 (0.3)	1,785 (0.1)	2 (0.0)	60 (0.9)	8 (0.6)	48 (0.3)	0 (0.0)
Adrenergics for systemic use	401 (1.0)	1,121 (1.8)	34,075 (2.7)	58 (0.6)	377 (5.3)	86 (6.6)	1,176 (7.6)	36 (13.9)
Antihistamines for systemic use	64 (0.2)	131 (0.2)	5,902 (0.5)	29 (0.3)	13 (0.2)	2 (0.2)	86 (0.6)	8 (3.1)

Excl., excluding.

**Table S3** Top 30 drug components according to symptom relief among antitussives and expectorants for acute cough

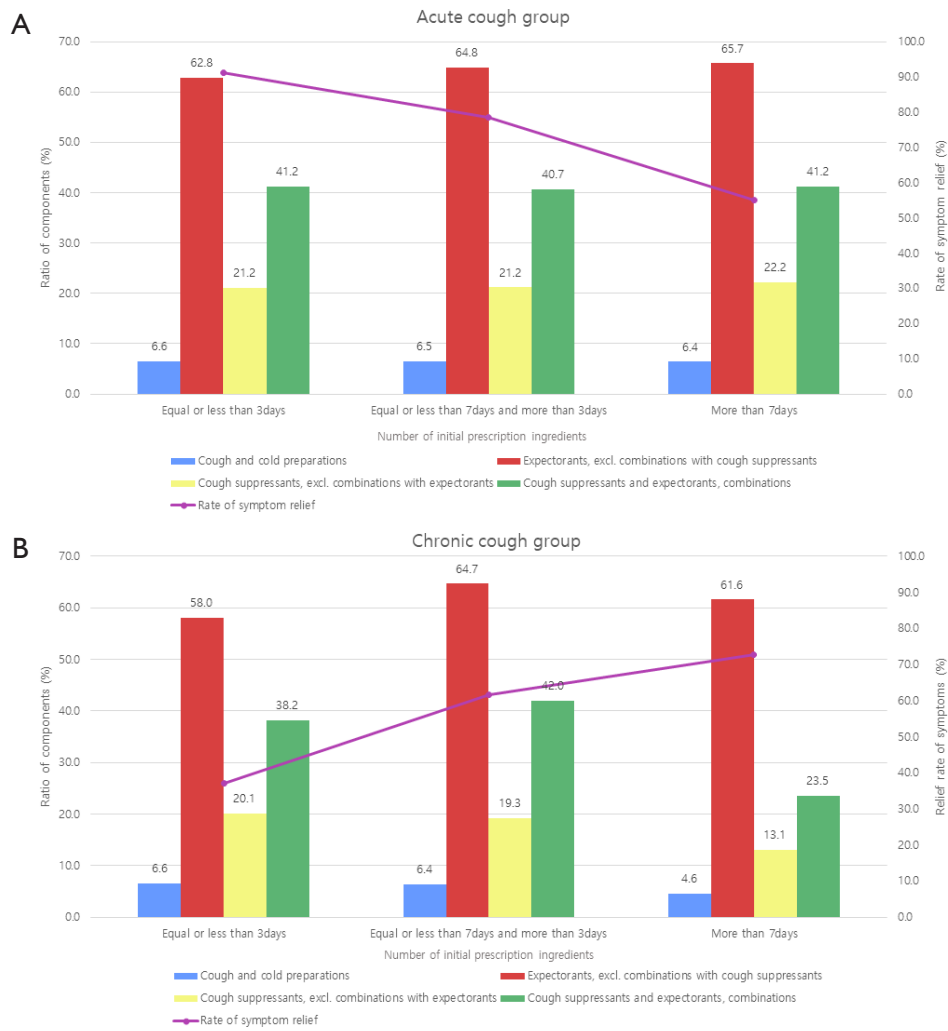
ATC upper index	Component code	Component name	Symptom relief, n	Symptom relief rate (%)
Adrenergics for systemic use	163101ATB/163104ATB	Formoterol fumarate hydrate 20 µg/formoterol fumarate hydrate 40 µg	10,193	77.8
	157901ATB	Fenoterol hydrobromide 2.5 mg	10,549	80.0
	452103CPC	Tulobuterol 2 mg	4,514	74.9
	264800ATB	Ambroxol hydrochloride 30 mg, clenbuterol hydrochloride 20 µg	7,992	83.1
Other systemic drugs for obstructive airway diseases	237001ACR	Theophylline 0.1 g	2,263	79.6
	503301ACH	Theobromine 0.3 g	20,243	78.7
	439101ATB	Doxofylline 0.4 g	8,163	79.8
Cough and cold preparations	267400ATB	Caffeine anhydrous 10 mg, chlorpheniramine maleate 1.5 mg, dihydrocodeine tartrate 5 mg, DL-methylephedrine hydrochloride 17.5 mg	51,436	81.2
Expectorants, excl. combinations with cough suppressants	533500ASY	Coptis rhizome butanol dried ext. (4.5–7→1) 13.125 mg (0.875 mg/mL), ivy leaf 30% ethanol dried ext. (5–7.5→1) 39.375 mg (2.625 mg/mL)	27,891	81.8
	150007ATB	Ivy leaf 30% ethanol dried ext. (5–7.5→1) (as hederacoside C 2.5 mg) 25 mg	18,935	84.3
	192401ATB	Methyl-N, S-diacetylcysteine 0.2 g	5,731	83.9
	118601ATB	Bromhexine hydrochloride 8 mg	16,226	84.2
	123804ACH/123801ACH	L-carbocysteine 0.375 g/L-carbocysteine 0.5 g	15,362	85.1
	106301ATB	Ambroxol hydrochloride 30 mg	51,971	83.8
	228201ACH/228202ACH	Sobrerol 0.1 g/sobrerol 0.2 g	6,016	85.8
	101801ACH/101804ACH	Acetylcysteine 0.1 g/acetylcysteine 0.2 g	248,101	84.8
	153101ACH	Erdosteine 0.3 g	139,155	83.9
	153101ATB	Erdosteine 0.3 g	7,301	84.1
	Cough suppressants, excl. combinations with expectorants	137703ATB	Codeine phosphate 20 mg	2,796
115801ACS		Benzonatate 0.1 g	2,939	80.9
429030ASS		Levocloperastine fendizoate [as cloperastine hydrochloride 32 mg (4 mg/mL)]	15,199	77.6
183102ATB		Levodropropizine 60 mg	142,390	79.6
Cough suppressants and expectorants, combinations	268000ATB	Chlorpheniramine maleate 1.5 mg, dihydrocodeine tartrate 5 mg, DL-methylephedrine hydrochloride 17.5 mg, guaifenesin 50 mg	262,648	82.9
	532500ASY	Ammonium chloride 0.2 g (10 mg/mL), chlorpheniramine maleate 3 mg (0.15 mg/mL), dihydrocodeine tartrate 10 mg (0.5 mg/mL), DL-methylephedrine hydrochloride 26.2 mg (1.31 mg/mL)	68,136	82.6
	266500ATB	Dextromethorphan hydrobromide 20 mg, guaifenesin 0.2 g, pseudoephedrine hydrochloride 60 mg	2,400	82.4
Antihistamines for systemic use	180101ATB	Ketotifen fumarate (as ketotifen 1 mg)	4,804	78.6

We aggregated the counts if the components were from the same branch. ATC, anatomical therapeutic chemical; excl., excluding; ext., extract.

**Table S4** Top 30 antitussives and expectorants for chronic cough according to symptom relief

ATC upper index	Component code	Component name	Symptom relief, n	Symptom relief rate (%)
Adrenergics, inhalants	225531CSI	Salbutamol sulfate [as salbutamol 20 mg (0.1 mg per dose)]	147	53.9
	543300CSI	Fluticasone propionate 15 mg (0.25 mg), salmeterol xinafoate [as salmeterol 3 mg (50 µg per dose)]	143	58.1
Adrenergics for systemic use	163101ATB/163104ATB	Formoterol fumarate hydrate 20 µg/formoterol fumarate hydrate 40 µg	521	72.7
	157901ATB	Fenoterol hydrobromide 2.5 mg	285	68.4
	218301ATB	Procaterol hydrochloride 25 µg	137	71.4
	452103CPC	Tulobuterol 2 mg	70	53.4
	264800ATB	Ambroxol hydrochloride 30 mg, clenbuterol hydrochloride 20 µg	146	71.6
Other systemic drugs for obstructive airway diseases	237001ACR/237003ACR/237003ATR	Theophylline 0.1 g/theophylline 0.2 g/theophylline 0.2 g	853	80.4
	503301ACH	Theobromine 0.3 g	463	59.8
	113801ATB	Bamiphylline hydrochloride 0.3 g	159	76.4
	439101ATB	Doxofylline 0.4 g	1,965	72.8
Cough and cold preparations	267400ATB	Caffeine anhydrous 10 mg, chlorpheniramine maleate 1.5 mg, dihydrocodeine tartrate 5 mg, DL-methylephedrine hydrochloride 17.5 mg	504	66.3
Expectorants, excl. combinations with cough suppressants	533500ASY	Coptis rhizome butanol dried ext. (4.5–7→1) 13.125 mg (0.875 mg/mL), ivy leaf 30% ethanol dried ext. (5–7.5→1) 39.375 mg (2.625 mg/mL)	340	64.5
	150007ATB	Ivy leaf 30% ethanol dried ext. (5–7.5→1) (as hederacoside C 2.5 mg) 25 mg	251	63.5
	101804ACH	Acetylcysteine 0.2 g	2521	71.9
	118601ATB	Bromhexine hydrochloride 8 mg	211	65.1
	123804ACH/123801ACH	L-carbocysteine 0.375 g/L-carbocysteine 0.5 g	329	76.3
	106301ATB	Ambroxol hydrochloride 30 mg	453	63.7
	153101ATB/153101ACH	Erdosteine 0.3 g/erdosteine 0.3 g	2,682	71.1
Cough suppressants, excl. combinations with expectorants	137703ATB	Codeine phosphate 20 mg	141	67.8
	429030ASS	Levocloperastine fendizoate [as cloperastine hydrochloride 32 mg (4 mg/mL)]	86	56.2
	183102ATB	Levodropropizine 60 mg	1,039	57.6
Cough suppressants and expectorants, combinations	268000ATB	Chlorpheniramine maleate 1.5 mg, dihydrocodeine tartrate 5 mg, DL-methylephedrine hydrochloride 17.5 mg, guaifenesin 50 mg	2,068	63.9
	532500ASY	Ammonium chloride 0.2 g (10 mg/mL), chlorpheniramine maleate 3 mg (0.15 mg/mL), mdihydrocodeine tartrate 10 mg (0.5 mg/mL), DL-methylephedrine hydrochloride 26.2 mg (1.31 mg/mL)	340	64.5
Antihistamines for systemic use	180101ATB	Ketotifen fumarate (as ketotifen 1 mg)	79	72.5

We aggregated the counts if the components were from the same branch. ATC, anatomical therapeutic chemical; excl., excluding; ext., extract.



**Figure S1** Ratio of drug components and symptom relief rate according to initial prescription days in the acute (A) and chronic cough (B) groups. Excl., excluding.