

APIs, Intermediates:

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1460, Sangtrashan Road, Pahar Ganj, New Delhi-55

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E-mail : finechemicals@gmail.com

## PIPERIDONE AND PIPERIDINE DERIVATIVES

### N-METHYL PIPERIDONE DERIVATIVES :

N-Methyl-4-piperidone	CAS No. 1445-73-4
N-Methyl-4-hydroxypiperidine	CAS No. 106-52-5
N-Methyl-4-chloropiperidine	CAS No. 5570-77-4
N-Methyl-4-chloropiperidine HCl	CAS No. 5382-23-0
N-Methyl-4-aminopiperidine	CAS No. 41838-46-4
N-Carboethoxy-4-piperidone 2	CAS No. 29976-53-
N-Carboethoxy-4-hydroxypiperidine	CAS No. 65214-82-6
N-Carboethoxy-4-aminopiperidine	CAS No. 58859-46-4

## **N-BENZYL PIPERIDONE DERIVATIVES :**

N-Benzyl-4-piperidone	CAS No. 3612-20-2
N-Benzyl-4-hydroxypiperidine	CAS No. 4727-72-4
4-Benzyl-4-hydroxypiperidine 7	CAS No. 51135-96-
N-Benzyl-4-chloropiperidine 9	CAS No. 67848-71-
N-Benzyl-4-aminopiperidine 0	CAS No. 50541-93-
4-(2-Keto-benzimidazoliny) piperidine	CAS No. 20662-53-7

## **GRIGNARD REACTION PIPERIDONE DERIVATIVES :**

4-(4-Chlorophenyl)-4-hydroxypiperidine	CAS No. 39512-49-7
4-(4-Bromophenyl)-4-hydroxypiperidine	CAS No. 57988-58-6
4-Phenyl-4-hydroxypiperidine	CAS No. 40807-61-2
4-Phenylpiperidine	CAS No. 771-99-3

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## TERT-BOC PIPERIDONE DERIVATIVES :

N-tert Boc-4-piperidone  
No. 79099-07-3 CAS

N-Boc-4-aminopiperidine  
No. 87120-72-7 CAS

4-tert-Boc-aminopiperidine  
No. 73874-95-0 CAS

N-Boc-4-hydroxypiperidine  
No. 109384-19-2 CAS

## SPECIALISED PIPERIDONE DERIVATIVES :

4-Piperidone HCl H<sub>2</sub>O  
CAS No. 40064-34-4

4-Piperidone ethylene ketal  
No. 177-11-7 CAS

4-Hydroxypiperidine  
CAS No. 5382-16-1

4-Aminopiperidine  
CAS No. 13035-19-3

1-(2-Phenylethyl) piperidin-4-one  
No. 39742-60-4 CAS

1,4'-Bipiperidine / 4-Piperidino piperidine  
No. 4897-50-1 CAS

1,4'-Bi piperidine 2 HCl  
CAS No. 4876-60-2

N-Piperidin-4-yl benzamide  
CAS No. 33953-37-6

N-Isobutyl-4-piperidone  
No. 72544-16-2

CAS

1-(4-Chlorobenzhydryl)-piperizine  
No. 303-26-4

CAS

1,4'-Bipiperidine-4-carboxamide  
No. 39633-82-4

CAS

N-Ethyl-4-piperidone  
CAS No. 3612-18-8

1,3-dimethyl-4-piperidone  
No. 4629-80-5

CAS

(R)-(-)-3-Aminopiperidine dihydrochloride  
No. 334618-23-4

CAS

N-Propyl-4-piperidone  
CAS No. 23133-37-1

## ACTIVE PHARMACEUTICAL INGREDIENTS

Name	Specificati on	Regulatory Status	Classification
<b>Domperidone</b>	<b>IP/EP/BP/JP</b>	<b>DMF / CEP</b>	<b>Anti-emetic</b>
<b>Domperidone Maleate</b>	<b>IP/BP/EP</b>	<b>DMF / CEP</b>	<b>Anti-emetic</b>
<b>Itopride HCl</b>	<b>In-house</b>	<b>Tech Pack</b>	<b>Anti-emetic</b>
<b>Pantoprazole Sodium Sesquihydrate</b>	<b>IP/USP/BP/E P</b>	<b>DMF / CEP</b>	<b>Anti-ulcer</b>
<b>Esomeprazole Magnesium Trihydrate</b>	<b>IP/USP/BP/E P</b>	<b>Tech Pack</b>	<b>Anti-ulcer</b>
<b>Cisapride Monohydrate</b>	<b>USP</b>	<b>DMF</b>	<b>Anti-ulcer</b>

<b>Loratadine</b>	<b>USP/EP</b>	<b>USDMF / CEP</b>	<b>Anti-histamine</b>
<b>Desloratadine</b>	<b>EP</b>	<b>DMF/CEP Applied</b>	<b>Anti-histamine</b>
<b>Cyproheptadine HCl</b>	<b>IP/USP/BP/E</b>	<b>USDMF / EDMF</b>	<b>Anti-histamine</b>
<b>Ebastine</b>	<b>P</b>	<b>USDMF / EDMF</b>	<b>Anti-histamine</b>
<b>Oxatomide</b>	<b>EP/BP</b>	<b>CEP Applied</b>	<b>Anti-histamine</b>
<b>Oxatomide</b>	<b>JP</b>	<b>Tech Pack</b>	<b>Anti-histamine</b>
<b>Fexofenadine HCl</b>	<b>IP/USP/BP/E</b>	<b>Tech Pack</b>	<b>Anti-histamine</b>
<b>Fexofenadine HCl</b>	<b>P</b>	<b>DMF/CEP Applied</b>	<b>Anti-histamine</b>
<b>Clopidogrel Bisulfate</b>	<b>IP/USP/BP/E</b>	<b>Tech Pack</b>	<b>Anti-thrombotic</b>
<b>Clopidogrel Bisulfate</b>	<b>P</b>	<b>USDMF/CEP</b>	<b>Anti-thrombotic</b>
<b>Loperamide HCl</b>	<b>IP/USP/BP/E</b>	<b>Applied</b>	<b>Anti-diarrheal</b>
<b>Loperamide HCl</b>	<b>P</b>	<b>Applied</b>	<b>Anti-diarrheal</b>
<b>Amitriptyline HCl</b>	<b>IP/USP/BP/E</b>	<b>USDMF/CEP</b>	<b>Anti-depressant</b>
<b>Amitriptyline HCl</b>	<b>P</b>	<b>USDMF/CEP</b>	<b>Anti-depressant</b>
<b>Nortriptyline HCl</b>	<b>IP/USP/EP</b>	<b>Tech Pack</b>	<b>Anti-depressant</b>
<b>Nortriptyline HCl</b>	<b>P</b>	<b>Tech Pack</b>	<b>Anti-depressant</b>
<b>Cyclobenzaprine HCl</b>	<b>USP</b>	<b>USDMF</b>	<b>Anti-depressant</b>

\*\* Cisapride Monohydrate and Oxatomide cannot be offered in Indian Market

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Patented products cannot be offered to the countries where patent law is in force. Final  
responsibility lies with the buyer exclusively.**

## ACTIVE PHARMACEUTICAL INGREDIENTS

<b>Name</b>	<b>Specificati on</b>	<b>Regulatory Status</b>	<b>Classification</b>
<b>Flurbiprofen</b>	<b>USP/BP/EP</b>	<b>Tech pack available USDMF / CEP</b>	<b>Anti- inflammatory</b>
<b>Pimozide</b>	<b>IP/USP/EP</b>	<b>Applied</b>	<b>Anti-Psychotic</b>
<b>Quetiapine Hemifumarate</b>	<b>IP/In-house</b>	<b>DMF</b>	<b>Anti-Psychotic</b>
<b>Nebivolol</b>	<b>IH/IP</b>	<b>Tech Pack</b>	<b>Anti-hypertensive</b>
<b>Losartan Potassium</b>	<b>IP/USP/BP/E</b>	<b>DMF / CEP</b>	<b>Anti-hypertensive</b>
<b>Telmisartan</b>	<b>P</b>	<b>CEP Applied</b>	<b>Anti-hypertensive</b>
<b>Telmisartan</b>	<b>IP/USP/BP/E</b>	<b>USDMF / CEP</b>	<b>Anti-hypertensive</b>
<b>Olmesartan Medoxomil</b>	<b>P</b>	<b>Applied</b>	<b>Anti-hypertensive</b>

<b>Carvedilol</b>	<b>USP/EP</b>	<b>Tech Pack</b>	<b>Anti-hypertensive</b>
<b>Donepezil HCl</b>	<b>IP/USP</b>	<b>DMF</b>	<b>Alzheimer</b>
<b>Donepezil HCl Monohydrate</b>	<b>USP</b>	<b>DMF DMF / CEP</b>	<b>Alzheimer</b>
<b>Ketorolac Tromethamine</b>	<b>IP/USP/EP</b>	<b>Applied</b>	<b>Analgesic</b>
<b>Pregabalin</b>	<b>IP/In-house</b>	<b>Tech Pack Tech pack available</b>	<b>Anti-convulsant</b>
<b>Diatrizoic Sodium</b>	<b>USP</b>	<b>Tech pack available</b>	<b>Contrast media</b>
<b>Diatrizoic Acid</b>	<b>USP</b>	<b>Tech pack available</b>	<b>Contrast media</b>
<b>Diatrizoic Meglumine</b>	<b>USP</b>	<b>Tech pack available</b>	<b>Contrast media</b>
<b>Methylcobalamin</b>	<b>JP</b>	<b>Tech pack available</b>	<b>Nutrition supplement</b>
<b>Ursodeoxycholic Acid</b>	<b>BP/EP</b>	<b>Underdevelopment</b>	<b>Primary biliary cirrhosis</b>
<b>Levosulpiride</b>	<b>IP/In-House</b>	<b>Underdevelopment</b>	<b>Anti Emetic</b>
<b>Amisulpride</b>	<b>In-House</b>	<b>Underdevelopment</b>	<b>Anti-psychotic</b>

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## INTERMEDIATES

### DOMPERIDONE & DOMPERIDONE MALEATE

1-(3-Chloropropyl)-1,3 dihydro 1H benzimidazol-2-one	CAS No.	62780-89-6
5-Chloro 1,3 dihydro-1-(4-piperidinyl)-2H-benzimidazol-2-one	CAS No.	53786-28-0

### LORATADINE & DESLORATADINE

3(2-(3-Chloro phenyl) ethyl) cyano pyridine	CAS No.	31255-55-7
8-Chloro-5,6dihydro (1H)-benzo [5,6] cyclohepta (1,2b) pyridin-11-one	CAS No.	31251-41-9
8 chloro-11-[(N-Methyl)-4-piperidylidene]- 6, 11-dihydro-5H-benzo [5, 6] cyclohepta (1,2b) pyridine (Methyl Loratadine)	CAS No.	38092-89-6
{3-[2-(3-chlorophenyl) ethyl] pyridine-2-yl} (1-methyl piperidine-4-yl)		

(methanol HCl)  
N-Methyl-4-chloro piperidine

CAS 119770-60-  
No. 4  
CAS No. 5570-77-4

## LOSARTAN POTASSIUM

2 -Butyl-4-chloro-[1-(2'-cyanobiphenyl-4-yl)

methyl]-5-(hydroxymethyl) – imidazole  
5-(4'-Bromomethyl-1, 1'-biphenyl-2-yl)-1-triphenylmethyl-1H-tetrazole(TTBB)

CAS 114772-55-  
No. 3  
CAS No. 124750-51-2

2-Butyl-4-chloro-1-[2'(2-trityl-2H-tetrazol-5-yl)  
biphenyl-4-ylmethyl]-1H- imidazol- 5-ylmethanol (Trityl losartan).  
99-6

CAS No. 133909-

2-N-Butyl-4-Chloro-1-[(2"-H Tetrazol-5-yl) (1,1"-Biphenyl)-4yl)Methyl]  
-1H imidazole-5-Methanol(Losartan Base)  
4

CAS No. 11479-26-

## OLMESARTAN

4-(1-Hydroxy-1-methylethyl)-2-propyl-1-[[2'-[(triphenylmethyl)-1H-tetrazol-  
5-yl]

CAS 189400-21-  
No. 3

[1,1'-biphenyl]-4-yl)methyl]1H-imidazole-5-carboxylic acid ethyl ester  
5-Methoxy-2-oxo-1,3-dioxol-4-yl)methyl-4-(1-hydroxy-1-methylethyl)

CAS 144690-92-  
No. 6

-2propyl-1-(2-(2-triphenylmethyl)-2H-tetrazole-5-yl)biphenyl-4-yl)methyl)  
-1H-imidazole-5-carboxylate  
Ethyl 4 - (1-hydroxy -1 - methyl ethyl ) -2-propyl-imidazole-5-carboxylate

CAS 144689-93-  
No. 9

4-(Chloromethyl)-5-methyl-1,3-dioxol-2-one

CAS  
No. 80841-78-7

## TELMESARTAN

[1,1'-Biphenyl]-2-carbonitrile,4'-[(1,4'-dimethyl-2'-propyl[2,6'-bi  
-1H-benzimidazol]-1'-yl)methyl]- (1,1-biphenyl)-2-carbonitrile

CAS No. 144702-  
27-2

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## LOPERAMIDE HCl

4-(4-Chlorophenyl)-4-hydroxypiperidine  
N, N-Dimethyl (tera hydro-3,3-diphenyl)-2-

CAS No. 39512-  
49-7

furyliden ammonium bromide ( Furaniminium Bromide )  
1,1-Diphenyl-3-butyrolactone

CAS 37743-18-  
No. 3  
CAS No. 956-89-8

4-Bromo-2-2-diphenylbutyricacid

CAS 37742-98-  
No. 6

## DONEPEZIL

4-[(5,6-Dimethoxy-1-indanon-2-yl) methyl] piperidine	CAS No.	120014-30-4
5,6-Dimethoxy-2-(pyridine-4-yl)-methylene-indan-1-one	CAS No.	4803-74-1

### PANTOPRAZOLE SODIUM

3,4 Dimethoxy-2-chloromethyl pyridine hydrochloride	CAS No.	72830-09-2
5-(Difluoromethoxy)-2-mercapto-1H-benzimidazole	CAS No.	97963-62-7
5-(Difluoromethoxy)-2- {[ ( 3,4 dimethoxypyridin-2-yl) methyl] thio}-1H-benzimidazole 64-9	CAS No.	102625-

### FEXOFENADINE HCl

2-(4-(1-hydroxy-4-(4-(hydroxydiphenylmethyl)piperidin-1-yl)butyl) phenyl)-2-methylpropanoic acid (Fexofenadine Base) 0	CAS No.	83799-24-0
Methyl 4-[4-[4-(hydroxydiphenylmethyl)-1-piperidinyl]-1-oxobutyl] -2,2-dimethylbenzeneacetate Methyl 2-(4-(4-chlorobutanoyl)phenyl)-2-methylpropanoate	CAS No.	154477-55-1 154477-54-0

### CISAPRIDE MONOHYDRATE

Ethyl 4-amino-3-methoxypiperidine-1-carboxylate hydrochloride	CAS No.	83863-71-2
4-amino-5-chloro-2-methoxy-N-(3-methoxy piperidin-4-yl) benzamide	CAS No.	221180-26-3

### CYPROHEPTADINE HCl

Dibenzosuberone	CAS No.	2222-33-5
N-Methyl-4-chloropiperidine	CAS No.	5570-77-4

### CLOPIDOGREL

S(+)-2-Chlorophenylglycine methylester tartarate	CAS No.	141109-14-0
Toluene-4-sulfonicacid thiophene-2-yl-ethylester	CAS No.	40412-06-4
Methyl (2-Chlorophenyl){(2-(2-thienyl)ethyl)amino}acetate hydrochloride	CAS No.	141109-19-5

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## NEBIVOLOL

6-Fluoro-3,4-dihydro-2H-chromene-2-carboxylic acid (6-Fluoro-3,4-dihydro-2H-chromen-2-yl)methanol  
2S)-6-Fluoro-2-((2S)-oxiran-2-yl)-3,4-dihydro-2H-chromene (Isomer-A) (2R)-6-Fluoro-2-((2R)-oxiran-2-yl)-3,4-dihydro-2H-chromene (Isomer -B)  
(1S)-2-(benzyl amino)-1-((2S)-6-fluoro-3,4-dihydro-2H-chromen-2-yl)ethanol

## PIMOZIDE

4-(2-Keto-1-benzimidazoliny) piperidine 1-Chloro-4,4-di (4-fluorophenyl) butane

## HALOPERIDOL

4-Chloro-4'-fluoro-butyrophenone (**or**)  
3-Chloropropyl-4-fluorophenyl ketone  
4-(4-Chlorophenyl)-4-hydroxypiperidine

## AMITRIPTYLINE HCl & NORTRIPTYLINE HCl

Dibenzosuberone  
3-(N,N Di methyl amino) propylchloride HCl

## PREGABALIN

(+) -3- (Carbamoy methyl)-5-methyl hexanoic acid  
(R)-(-)-3-Carbomoy methyl)-5-methyl hexanoic acid (**or**)  
(R)-(-)-3-(2-Amino-2-oxo ethyl) hexanoic acid

## QUETIAPINE HEMIFUMARATE

11-piperazin-1-yl-dibenzo [b,f][1,4]thiazepine dihydrochloride Dibenzo[b,f][1,4]-thiazepin-11-amine Hydrochloride

## FENTANYL

1-(2-phenylethyl)piperidin-4-one  
N-phenyl-1-(2-phenylethyl) piperidin-4-amine

## ITOPRIDE HCl

2-[4-(amino methyl) phenoxy]-N, N-dimethyl ethanamine

CAS No. 1210-35-1  
CAS No. 5407-04-5

CAS No. 181289-15-  
6  
CAS No. 181289-33-  
8

CAS No. 99199-60-7 CAS No. xx xx xx xx xx CAS No. 129101-36-6 CAS No.  
129101-37-7 CAS No. xx xx xx xx xx

CAS No. 20662-53-7  
CAS No. 3312-04-7

CAS No. 111974-74-  
4  
CAS No. 1176987-  
11-3

CAS No. 3874-54-2  
CAS No. 39512-49-7

CAS No. 39742-60-4  
CAS No. 21409-26-7

CAS No. 20059-73-8

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## EBASTINE

4-(diphenyl methoxy)methyl piperidineHCl	CAS No.	132-18-3
4-(Diphenyl methoxy) piperidine	CAS No.	58258-01-8
4-Tert butyl-4-chlorobityrophenone	CAS No.	43076-61-5

## OXATOMIDE

1-(3-chloropropyl)-1,3 dihydro 2H benzimidazol-2-one	CAS No.	62780-89-6
1-(Diphenylmethyl) piperazine	CAS No.	841-77-0

## KETOROLAC TROMETHAMINE

Phenyl(1H-pyrrol-2-yl)methanone	CAS No.	7697-46-3
Triethyl [5-benzyl-1H pyrrol-2yl] methane tri carboxylate	CAS No.	136116-84-2
5-benzoyl-2, 3-dihydro-1H-pyrrolizine-1-carboxylic acid	CAS No.	74103-06-3

## BEPOTASTINE BESILATE

$\alpha$ -(4-Chlorophenyl) pyridine-2-methanol	CAS No.	27652-89-7
2-((4-Chlorophenyl) (4-piperdinyloxy) methyl pyridine	CAS No.	122368-54-1
4-Hydroxypiperidine	CAS No.	5382-16-1

## DOLUTEGRAVIR

(R)-3-Amino Butanol	CAS No.	61477-40-5
2,4-Difluorobenzylamine	CAS No.	72235-52-0
3-(benzyloxy)-5-bromo-2-methylpuridin-4-ol	CAS No.	-----

## LINAGLIPTIN

(R)-3-(BOC-AMINO) PIPERIDINE	CAS No.	309956-78-3
(R)-3 aminopiperidine Di hydrochloride	CAS No.	334618-23-4

## CYCLOBENZOPRINE HCl

Dibenzosuberone	CAS No.	2222-35-5
3-(N,N Di methyl amino) propylchloride HCl	CAS No.	5407-04-5

No.

**BICALUTAMIDE**

2-2'-[5-(bromomethyl)benzene-1,3-diyl]bis(2-methylpropanenitrile)

CAS 120511-84-  
No. 4

**CINNARAZINE**

1-(Diphenylmethyl) piperazine

CAS  
No. 841-77-0

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<b>PRUCALOPRIDE</b> 1-(3-Methoxy propyl) piperidine-4-one	CAS No.	16771-85-0
<b>CRIZOTINIB</b> N-Boc-4-hydroxypiperidine	CAS No.	109384-19-2
<b>ALCAFTADINE</b> N-Methyl-4-chloropiperidine	CAS No.	5570-77-4
<b>FLUNARIZINE Di HYDROCHLORIDE</b> 1-[bis (4-fluorophenyl) methyl] piperazine	CAS No.	27469-60-9
<b>FLUSPIRILENE</b> 1,1(4-Chlorobutylidene)Bis-(4-Fluorobenzene)	CAS No.	3312-04-7
<b>RUPATADINE</b> 4-Hydroxypiperidine	CAS No.	5382-16-1
<b>RIFABUTIN</b> 1-Isobutyl-4-Piperidone	CAS No.	72544-16-2
<b>ANASTRAZOLE</b> 2-Methyloxirane-2-carboxylic acid-(4-Cyano-3-trifluoromethylphenyl)amide	CAS No.	90357-51-0
<b>EPROSARTAN</b> 2-butyl-4-formylimidazole	CAS No.	68282-49-5
<b>KETOTIFENE</b> N-Methyl-4-chloropiperidine	CAS No.	5570-77-4

## UNDER DEVELOPMENT

<b>FEBUXOSTAT</b> ethyl 2-(4-hydroxyphenyl)-4-methylthiazole-5-carboxylate	CAS No.	161797-99-5
ethyl 2-(4-isobutoxyphenyl)-4-methylthiazole-5-carboxylate	CAS No.	-----
ethyl 2-(3-formyl-4-isobutoxyphenyl)-4-methylthiazole-5-carboxylate	CAS No.	161798-03-4
ethyl 2-(3-cyano-4-isobutoxyphenyl)-4-methylthiazole-5-carboxylate	CAS No.	160844-75-7
<b>ARIPIPRAZOLE</b> 7- hydroxy-3,4-Dihydro carbostyrl	CAS No.	-----
1-(2,3- Dichloro phenyl) pipearzne hydrochloride	CAS No.	-----

**MACITENTAN INTERMEDIATES**  
**IVACAFTOR INTERMEDIATES**  
**RILPIVIRINE INTERMEDIATES**

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## EXPERIENCE IN CHEMICAL REACTIONS

- |                            |                          |                          |  |
|----------------------------|--------------------------|--------------------------|--|
|                            | Curtius                  |                          |  |
| 1. Acylation               | 28. rearrangement,       | 53. Grignard degradation | 81. Raney nickel   |
| 2. Alcohol oxidation       | Curtius reaction         | 54. Grignard reaction    | 82. Racemization   |
| 3. Aldol condensation      | 29. Cyanohydrin reaction | 55. Halogen addition     | 83. Reductive amination                                  |
| 4. Allylic                 |                          |                          |  |
| 4. rearrangement           | 30. Dakin reaction       | reaction                 | 84. Reductive dehalogenation of halo                     |
| 5. Amine alkylation        | 31. Dehydration reaction | 56. Heck reaction        | ketones  |
| 6. Aromatic nitration      | 32. Dehydrogenation      | 57. Hydration reaction   |  |
| 7. Arndt–Eistert synthesis | 33. Demjanov             | Hofmann                  | 85. Reimer–Tiemann                                       |
| 8. Baeyer–Villiger         | rearrangement            | 58. degradation,         | reaction   |
| oxidation                  | Dess–Martin              | Exhaustive               |  |
| 9. Baeyer–Villiger         | 34. oxidation            | methylation              | 86. Sandmeyer reaction                                   |
| rearrangement              | 35. Diazotisation        | 59. Hofmann elimination  | 87. Saponification                                       |
| 10. Beckmann               | 36. DIBAL-H selective    | 60. Hofmann              | 88. Sarett oxidation                                     |
| rearrangement              | reduction                | rearrangement            | Saytzeff rule,   |
| 11. Bingel reaction        | 37. Dieckmann            | 61. Hydrohalogenation    | 89. Saytzeff's   |
| 12. Birch reduction        | condensation             | 62. trans-cis isomerism  | Rule   |
| 13. Blanc reaction         | 38. Dieckmann reaction   | 63. Jones oxidation      | 90. Schiemann reaction                                   |
| 14. Blanc                  | 39. Diels–Alder reaction | 64. Knoevenagel          | 91. Schiff reaction                                      |
| chloromethylation          | 40. Duff reaction        | condensation             | Sharpless  |
| 15. Cannizzaro reaction    | 41. E1cB elimination     | 65. Knorr pyrazole       | 92. epoxidation  |
| 16. Carbonyl reduction     | reaction                 | synthesis                | 93. S <sub>N</sub> Ar nucleophilic aromatic substitution |
| 17. CBS reduction          | 42. Elimination reaction | 66. synthesis            | 94. S <sub>N</sub> 1                                     |
| 18. Chichibabin reaction   | 43. Ene reaction         | 67. Leuckart reaction    | 95. S <sub>N</sub> 2                                     |
| 19. Chiral pool synthesis  | 44. Epoxidation          | 68. Mannich reaction     | 96. S <sub>N</sub> i                                     |
| 20. Claisen condensation   | 45. Favorskii reaction   | 69. Methylation          | 97. Sommelet reaction                                    |
| Claisen                    | 46. Favorskii            | 70. Michael condensation | 98. Suzuki coupling                                      |
| 21. rearrangement          | rearrangement            | 71. Neber rearrangement  | 99. Swern oxidation                                      |
| 22. Claisen–Schmidt        | 47. Fischer indole       | 72. Nef reaction         | 100. Transesterification                                 |
| condensation               | synthesis                | 73. Negishi coupling     | 101. Vilsmeier–Haack                                     |
| Clemmensen                 | 48. Friedel–Crafts       | 74. Ozonolysis           | reaction   |
| 23. reduction              | acylation                | 75. Paal–Knorr pyrrole   | 102. Wittig reaction                                     |
| 24. Corey–Kim oxidation    | 49. Friedel–Crafts       | synthesis                | Wittig–Horner  |
| 25. Corey–Winter olefin    | alkylation               | 76. Paal–Knorr synthesis | 103. reaction  |
| synthesis                  | 50. Fries rearrangement  | 77. Passerini reaction   | 104. Wolff–Kishner                                       |
|                            | 51. Gabriel synthesis    | 78. Peptide synthesis    | reduction  |

- |                         |                     |                     |
|-------------------------|---------------------|---------------------|
| 26. Coupling reaction   |                     | 79. Perkin reaction |
|                         | 52. Gattermann Koch | Pinacol             |
| 27. Curtius degradation | reaction            | 80. rearrangement   |

## LIST OF CHEMICAL REACTIONS CAN BE PERFORMED

- |                       |                           |                        |                      |
|-----------------------|---------------------------|------------------------|----------------------|
| 1. Amidation          | 8. Cyclization            | 17. Hoff-man           | 22. Reductions       |
| 2. Addition reactions | 9. De-carboxylations      | rearrangement          | 23. Resolution       |
| 3. N-Alkylations      | 10. Diazotization         | 18. Low temperature    | 24. Racemizations    |
| 4. Bromination        | 11. Elimination reactions | reaction               | 25. Salt formation   |
|                       |                           | 19. Moisture sensitive | Stereo selective     |
| 5. Column             | 12. Esterifation          | reactions              | 26. and              |
| Chromatography for    | 13. Epoxidation           |                        | Chiral resolutions   |
| multi-gram            |                           |                        |                      |
| purifications         | 14. Grignard reactions    | 20. Protection & de-   | 27. Wittig reactions |
| 6. Chlorination       | 15. Hydrolysis            | protection             |                      |
| 7. Condensation       | Hydrogenation             | 21. Oxidations         |                      |
|                       | 16. reactions             |                        |                      |

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