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NOTE

Some Quinoline, Quinazoline and Pyrazine Derivatives as Antitubercular-Antibacterial Agents

PRATIBHA DESAI*, JITEN NAIK†, C.M. DESAI† and DINESH PATEL†
Department of Microbiology
B.P. Baria Science Institute, Navsari 396 445, India

Antitubercular/antibacterial testing have been reported keeping in mind different types of structures of compounds, such as benzene nucleus linked to quinoline, pyrazine to quinazoline and nicotine to quinazoline.

2,8-Dichloro-4-methyl quinoline, prepared from 8-chloro-2-hydroxy-4-methyl quinoline was condensed with different arylamines giving 2-(substituted) phenylimino-8-chloro-4-methyl quinolines which were tested as antitubercular/ antibacterial agents.

In our previous work, quinoline hydrazides, hydrazino quinolines and quinolin-4-yl hydrazino quinazolines have been reported as antitubercular/ antibacterial agents.[1]

8-Chloro-2-hydroxy-4-methyl quinoline was prepared by condensing 2-chloro aniline with methyl acetoacetate in glacial acetic acid at 95°C giving 2-chloroaceto-acetanilide which was cyclised by conc. sulfuric acid at 95°C into 8-chloro-4-methyl 2-hydroxy quinoline, later converted into 2,8-dichloro-4-methyl quinoline using phosphorus oxychloride. 2,8-Di-chloro-4-methyl quinoline was condensed with aryl amines by refluxing in butanol giving 2-(2-substituted) phenyl-imino-8-chloro-4-methyl quinolines, 2-chloro-quinazolines were respectively condensed with nicotinic hydrazide by refluxing in butanol to give pyridoyl hydrazino quinazolines and also with pyrazinamide to give corresponding quinazolinylimino pyrazine.

The identity and purity of products were confirmed by IR, NMR, TLC and molecular weight determination by the procedures reported.[2]

As has been reported earlier, there was no correlation between antitubercular activity and antibacterial activity.[2] 4-Chloro and 4-ethoxy substituents in aromatic nucleus increase anti-TB activity, whereas 4,5 and 4,6-dimethyl groups increase such activity in quinazoline moeity. However, the presence of these methyl groups in quinazoline moeity increases antibacterial effect in pyrazine structures. It may

†Artemis Research Laboratory, Themis Chemicals Ltd., Vapi 396 195, India.

be concluded that the overall effect of substituents has some relation with respect to the whole structure of the compound.

TABLE-1
ANTITUBERCULAR/ANTIBACTERIAL ACTIVITY OF THE COMPOUNDS

No.	Compounds	m.p. (°C)	Yield (%)	Activity against (μg/ mL)				
				$H_{37}Rv$		*S. aureus*	*E. coli*	*Sal. paratyphi B.*
				5	10	5	5	5
				(Zone size in mm.)				
1.	-(2′-Methoxy)-	170	78	+++	++	6	8	7
2.	-(4′-Methoxy)-	181	73	++	+	6	8	12
3.	-(2′-Methyl)-	276	90	+	+	6	7	9
4.	-(4′-Methyl)-	260	81	++	++	7	6	6
5.	-(2′-Chloro)-	196	77	++	+	10	6	9
6.	-(3′-Chloro)-	186	59	++	+	6	6	9
7.	-(4′-Chloro)-	280	64	–	+	9	6	8
8.	-(4′-Ethoxy)-	262	72	–	–	9	8	7
9.	2-phenylimino-2-(-2-Dimethyl-2′-Quinazolinyl-imino)pyrazine	170	78	++	++	7	6	6
10.	2-(4′, 8′-Dimethyl-2′-	243	78	++	++	11	8	6
11.	2-(4′, 5′-Dimethyl-2′-	260	75	++	–	13	7	7
12.	2-(4′, 6′-Dimethyl-2′-2-(3′-pyridoyl hydrazino)-	245	78	+	+	8	7	7
13.	-4, 8-Dimethyl quinazoline	240	63	+	–	7	6	7
14.	-4, 5-Dimethyl quinazoline	252	56	–	–	6	7	7
15.	-4, 6-Dimethyl quinazoline	231	51	–	–	4	7	7

Symbols: " – " = No growth; "+ " = Scanty growth; "++ " = Moderate growth; "+++ " = Profuse growth.

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