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Potential Biologically Active Agents. III

Substituted 3-Arylaminomethylbenzoxazolin-2-ones

By Rajendra S. Varma

Department of Chemistry, Lucknow University, Lucknow, India

Benzoxazolines have been reported to exhibit various types of biological properties. Benzoxazolinone and its 3-methyl, 3-ethyl and 3-hydroxyethyl derivatives have shown anticonvulsant activity [1]. 3-Dialkylaminomethylbenzoxazolinones have displayed antimicrobial activity [2]. Bactericidal activity has been observed in benzoxazolinone and its quaternary ammonium complexes [3, 4]. In this communication the synthesis of 3-arylaminomethylbenzoxazolinones **1a–j** is described.

All compounds listed in Table 1 have been evaluated for their inhibitory effect against four organisms: Staphyloccus aureus, E. Coli, Acrobacter aerogenes, and Vibrio cholera by agar diffusion technique [5]. No significant activity was observed for any compound. Mc'erate inhibition was observed for **1a, 1e, 1j, 1k, 1l** against E. Coli, **1e** also inhibited the growth of Staphylococcus aureus. Bacterial cultures maintained at C. D. R. I., Lucknow were used.

Experimental

Melting points were taken in open capillary tubes and are uncorrected. Infrared spectra were recorded on a Perkin-Elmer 337 Spectrophotometer in KBr pellets.

3-Hydroxymethylbenzoxazolinone was prepared by published procedures [2].

3-Arylaminomethylbenzoxazolin-2-ones **1a–l**

Method A: 3-Hydroxymethylbenzoxazolinone (1.65 g; 0.01 mole) was dissolved in 15 ml of hot ethanol. To this solution there was added the amino compound (0.01 mole) in one portion. The reaction mixture was refluxed on a steam bath for 30 min. At the end of this period the contents of the flask were cooled. The solid product thus obtained was recrystallised from ethanol.

Method B: Formalin (37%; 2 ml) was added to a hot suspension of 1.35 g (0.01 mole) of benzoxazolinone and amino component (0.01 mole) in 20 ml of ethanol. The mixture was warmed on a water bath for few min. and then allowed to remain at room temp. overnight with occasional shaking. The product thus separated was recrystallised from ethanol.

The elemental analyses, m. ps. and other pertinent data are recorded in Table 1.

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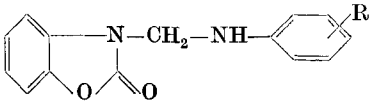
Table 1. 3-Arylaminomethyl-benzoxazolin-2-ones **1a–l**



Compound	R	M. P. °C	Yield % Method of prepn.	Formula	Analyses Calcd.	Found
1a	4-COOH[a])	223–224	55 B	$C_{15}H_{12}N_2O_4$	C 63.39 H 4.25	63.4 4.64
1b	4-$COOCH_3$	210–212	60 B	$C_{16}H_{14}N_2O_4$	C 64.42 H 4.73 N 9.39	64.50 4.94 9.54
1c	4-COOEt	192–194	65 A	$C_{17}H_{16}N_2O_4$	C 65.36 H 5.16 N 8.97	65.61 5.32 8.98
1d	3-COOH	210–212 dec.	55 A	$C_{15}H_{12}N_2O_4$	C 63.39 H 4.25 N 9.85	63.70 4.53 9.98
1e	3-$COOCH_3$ [b])	147–148	45 A	$C_{16}H_{14}N_2O_4$	C 64.42 H 4.73 N 9.39	64.35 5.11 9.52
1f	3-COOEt	149–150	60 A	$C_{17}H_{16}N_2O_4$	C 65.36 H 5.16	65.06 5.53
1g	2-COOH	178–180	50 A	$C_{15}H_{12}N_2O_4$	C 63.39 H 4.25	63.20 4.67
1h	2-$COOCH_3$ [c])	128–130	55 A	$C_{16}H_{14}N_2O_4$	C 64.42 H 4.73 N 9.39	64.70 5.22 9.70
1i	[d]), [h])	145–146	40 A	$C_{11}H_9N_3O_2S$	C 53.43 H 3.67 N 16.99	52.86 3.80 17.28
1j	4-Ph [e])	190–191	60 A	$C_{20}H_{16}N_2O_2$	C 75.93 H 5.10 N 8.85	75.40 5.15 8.75
1k	2-Ph [f]), [g])	143–144	55 A	$C_{20}H_{16}N_2O_2$	C 75.93 H 5.10 N 8.85	75.99 5.17 8.69
1l	4-(4-iodo-phenyl	176–179 dec.	75 A	$C_{14}H_{11}IN_2O_2$	C 45.91 H 3.02 N 7.65	45.95 3.07 7.75

IR (cm^{-1}): [a]) 3350 (NH), 2800 (broad, OH), 1670 (C=O carboxylic), 1750 (C=O ring); [b]) 3350 (NH), 1710 (C=O ester), 1750 (C=O ring); [c]) 3320 (NH), 1670 (C=O ester), 1770 (C=O ring); [d]) 3215 (NH), 1730 (C=O ring); [e]) 3420 (NH), 1750 (C=O ring); [f]) 3400 (NH), 1745 (C=O ring). NMR ($CDCl_3$, ppm): [g]) $\delta = 5.4$ (CH_2, singlet), 6.8–7.8 (multiplet, aromatic 13 H and NH). [h]) Compound **1i** is 3-(2-thiazolylaminomethyl)-benzoxazolin-2-one.

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