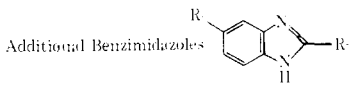
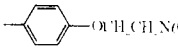
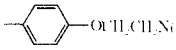
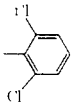
TABLE II

Additional Benzimidazoles



	R^2	R^5	Method	Recrystn solvent	Mp, °C	Yield, %	Formula	Analyses
21		H		H_2O	253–254[a]	84	$C_{13}H_{10}N_2O_2 \cdot HCl$	N, Cl
22		H	C	50% EtOH	184–185[b]	31	$C_{17}H_{19}N_3O \cdot 2C_4H_6O_6$	C, H, N
23		NO_2	C	EtOH	212–214	57	$C_{17}H_{18}N_4O_3$	C, H
24		Cl	C	EtOH	240.5–241.5	56	$C_{16}H_{12}Cl_2N_2$	Cl
25		Cl	C	Xylene	226.5–227.5	28	$C_{10}H_7ClN_2S$	Cl, S

[a] HCl salt: Cl calcd, 13.49; found 12.86. [b] Tartaric acid salt.

Br_2 in CCl_4 was added slowly with stirring at room temperature. The hydrobromide of the brominated product separated from the reaction mixture. The location of the Br substituent was verified by nmr spectroscopy.

Method C.—Equimolar amounts of the *o*-phenylenediamine and aromatic aldehyde were heated in $PhNO_2$ in a distillation apparatus until the distillate came over clear (H_2O no longer forming, usually about 30 min). The residual distilland was cooled, and the product was collected and recrystallized.

Compound 21 was prepared by refluxing a solution of 4-(2-benzimidazolyl)guaiacol[4] in pyridine·HCl for 45 min, then pouring over ice and collecting the product. It was recrystallized from H_2O containing small amounts of $NaHSO_3$ and HCl.

Acknowledgments.—The author thanks Drs. A. Steyermark and F. Scheidl for microanalyses, Mr. S. Traiman for ir spectra and Dr. T. Williams for nmr spectra and interpretation.

Antitumor Activities of Some Schiff Bases

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Received January 14, 1970

Schiff bases are known to slow the growth of some animal tumors.[1] More compounds of this type have now been prepared and have been screened by the Cancer Chemotherapy National Service Center. None of these compounds showed activity against lymphoid leukemia L1210 in the mouse, but some slowed the growth of intramuscular Walker sarcoma in the rat[2] as shown in Table I.

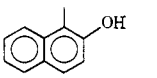
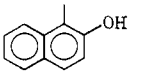
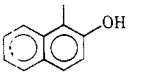
(1) E. M. Hodnett and W. Willie, *Proc. Okla. Acad. Sci.*, **46**, 107 (1966).

(2) "Protocols for Screening Chemical Agents and Natural Products against Animal Tumors and Other Biological Systems," Cancer Chemotherapy National Service Center (CCNSC), *Cancer Chemother. Rept.*, **25**, 1 (1962), and as modified (Jan 1966).

TABLE I

SCHIFF BASES PREPARED

$R^1CH{=}NR^2$

R^1	R^2	Intramuscular Walker sarcoma of the rat[a] Dose, mg/kg	T/C[b]	Ref
C_6H_4-2-OH		400	0.83	*c*
	C_6H_4-4-OH	400	1.03	*d*
	C_6H_3-2-OH-5-NO_2	400	0.94	*e*
	C_6H_5	400	0.89	*f*
	C_6H_4-2-OH	400	0.78	*f*
	C_6H_4-4-OH	400	0.58	*f*

[a] The screening data were supplied through the kindness of Dr. Harry B. Wood, Jr., of the Cancer Chemotherapy National Service Center, National Institutes of Health, Bethesda, Md. Assays were performed according to CCNSC specifications as reported in ref 2. [b] Effectiveness against intramuscular Walker sarcoma of the rat is measured by weights of tumors of treated rats (T) compared to the tumors of control rats (C); the value of T/C must be 0.53 or less for significant activity. [c] Mp 77–78°. *Anal.* ($C_{10}H_9N_2OS$) C, H, N. [d] G. N. Walker and M. A. Klett, *J. Med. Chem.*, **9**, 624 (1966). [e] Mp 195–196°. *Anal.* ($C_{12}H_9N_3O_3$) C, H, N. [f] I. A. Savich, V. V. Zelentsov, and I. Spitsyun, *Vestnik Moskov Univ. Ser. Mat. Mekh., Astron., Fiz., Khim.*, **11**, 233 (1956); *Chem. Abst.*, **53**, 1264*h* (1959).

Acknowledgments.—Grateful acknowledgment is made of the valuable assistance of Joyce Wan, Darwin Darr, and the staff of the Research Foundation of Oklahoma State University in the preparation of these compounds and of this report.