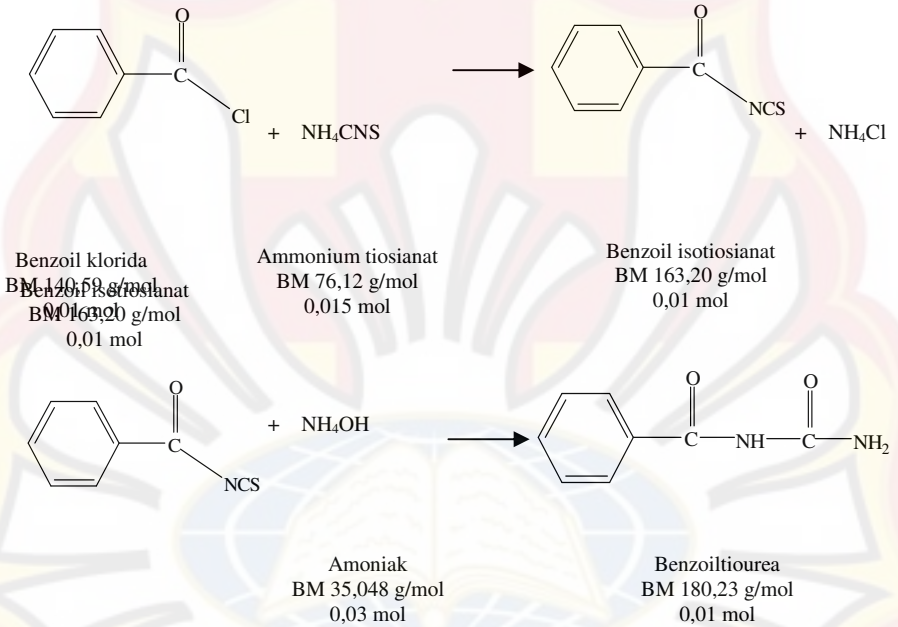


Alat Untuk Sintesis

Lampiran B

Perhitungan Hasil Sintesis Benzoiltiourea Secara Teoritis

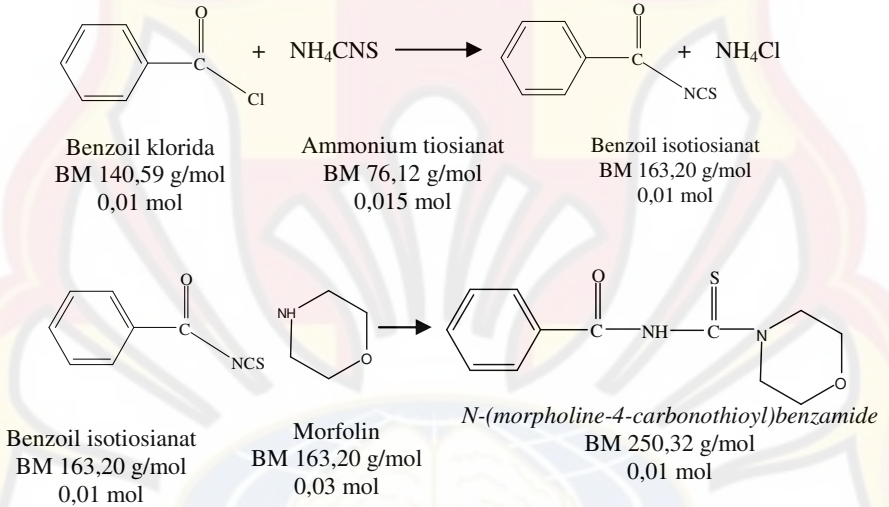


Gambar L.B. perhitungan hasil sintesis benzoiltiourea secara teoritis

Berat Molekul Benzoiltiourea = 180,23 g/mol

Berat Benzoiltiourea = 0,01 mol x 180,23 g/mol = 1,802 g

Lampiran C

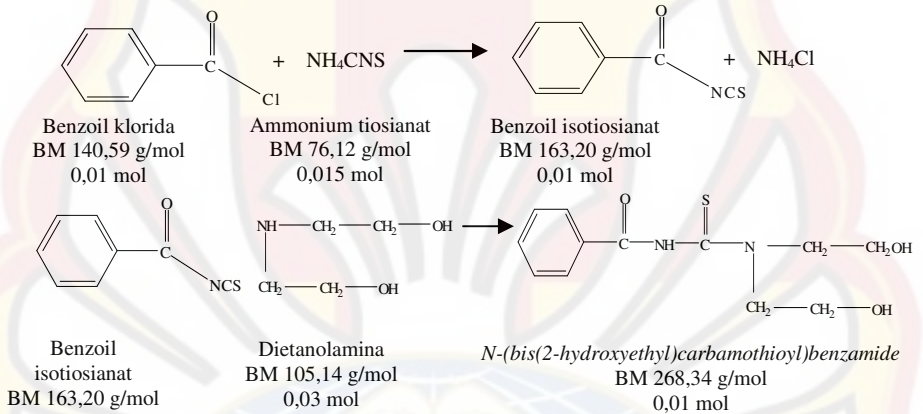
Perhitungan Hasil Sintesis *N*-(morpholine-4-carbonothioyl)benzamide

Gambar L. C. perhitungan hasil sintesis *N*-(morpholine-4-carbonothioyl)benzamide

Berat Molekul *N*-(morpholine-4-carbonothioyl)benzamide = 250,32 g/mol
 Berat *N*-(morpholine-4-carbonothioyl)benzamide 0,01 mol x 250,32 g/mol
 = 2,503 g

Lampiran D

Perhitungan Hasil Sintesis *N*-(bis(2-hydroxyethyl)carbamothioyl)benzamide



Gambar L. D. perhitungan hasil sintesis *N*-(bis(2-hydroxyethyl)carbamothioyl)benzamide

Berat Molekul *N*-(bis(2-hydroxyethyl)carbamothioyl)benzamide = 268,34 g/mol

Berat *N*-(bis(2-hydroxyethyl)carbamothioyl)benzamide 20,01 mol x 268,34 g/mol = 2,683 g

Perhitungan Rendemen Hasil

$$\text{Rendemen hasil} = \frac{\text{berat praktis}}{\text{berat teoritis}} \times 100\%$$

a. Benzoiltiourea

sintesis I : Berat praktis : 1,1623 gram

Berat teoritis : 1,802 gram

$$\text{Rendemen hasil} : \frac{1,1623}{1,8023} \times 100\% = 64,49\%$$

Sintesis II : rendemen hasil : 60,10% (1,0832 gram)

Sintesis III : rendemen hasil : 62,67% (1,1300 gram)

$$\text{Persentase hasil rata-rata} : \frac{64,49\% + 60,10\% + 62,67\%}{3} = 62,42\%$$

b. *N-(morpholine -4- carbonothioyl) benzamide*

sintesis I : Berat praktis : 1,5411 gram

Berat teoritis : 2,503 gram

$$\text{Rendemen hasil} : \frac{1,5411}{2,503} \times 100\% = 61,57\%$$

Sintesis II : rendemen hasil : 64,29% (1,6092 gram)

Sintesis III : rendemen hasil : 65,85% (1,6482 gram)

$$\text{Persentase hasil rata-rata} : \frac{61,57\% + 64,29\% + 65,85\%}{3} = 63,90\%$$

c. *N-(bis(2-hydroxyethyl)carbamothioyl)benzamide*

sintesis I : Berat praktis : 1,3275 gram

Berat teoritis : 2,683 gram

$$\text{Rendemen hasil} : \frac{1,3275}{2,683} \times 100\% = 49,48\%$$

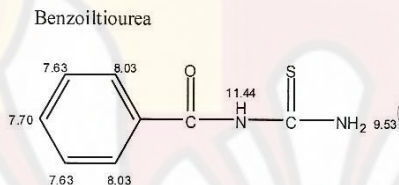
Sintesis II : rendemen hasil : 50,30% (1,3495 gram)

Sintesis III : rendemen hasil : 50,74% (1,3614 gram)

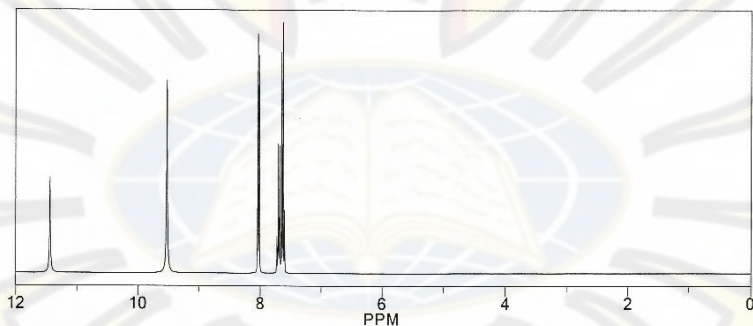
$$\text{Persentase hasil rata-rata} : \frac{49,48\% + 50,30\% + 50,74\%}{3} = 50,17\%$$

Estimasi $^1\text{H-NMR}$ Senyawa Benzoiltiourea

ChemNMR ^1H Estimation



Estimation quality is indicated by color: good, medium, rough



Protocol of the H-1 NMR Prediction:

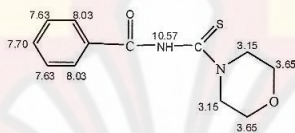
Node	Shift	Base + Inc.	Comment (ppm rel. to TMS)
NH	11,44	8,00	sec. amide
		3,44	general corrections
NH2	9,53	2,00	amine
		7,53	general corrections
CH	8,03	7,26	1-benzene
		0,69	1 -C(=O)N
		0,08	general corrections
CH	8,03	7,26	1-benzene
		0,69	1 -C(=O)N
		0,08	general corrections
CH	7,63	7,26	1-benzene
		0,18	1 -C(=O)N
		0,19	general corrections
CH	7,63	7,26	1-benzene
		0,18	1 -C(=O)N
		0,19	general corrections
CH	7,70	7,26	1-benzene
		0,25	1 -C(=O)N
		0,19	general corrections

Lampiran G

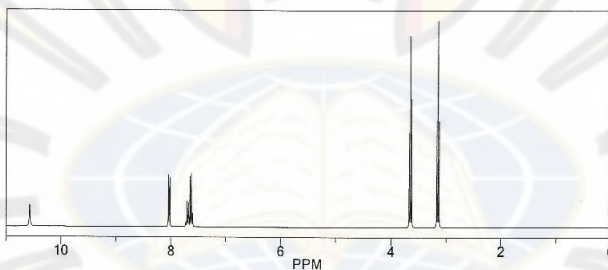
Estimasi $^1\text{H-NMR}$ Senyawa *N*-(morpholine-4-hydroxyethyl) carbonothioyl benzamide

ChemNMR ^1H Estimation

N-(morpholine-4-carbonothioyl)benzamide



Estimation quality is indicated by color: good, medium, rough



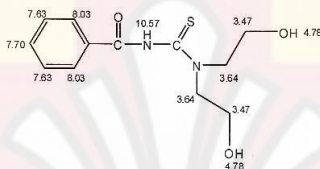
Protocol of the $^1\text{H-NMR}$ Prediction:

Node	Shift	Base + Inc.	Comment (ppm rel. to TMS)
NH	10,57	8,00	sec. amide
CH2	3,65	2,57	general corrections
		3,67	tetrahydro-1,4-oxazine
CH2	3,65	-0,02	general corrections
		3,67	tetrahydro-1,4-oxazine
CH2	3,15	-0,02	general corrections
		2,87	tetrahydro-1,4-oxazine
CH2	3,15	?	l - R from N-CHx
		0,28	general corrections
CH2	3,15	2,87	tetrahydro-1,4-oxazine
		?	l - R from N-CHx
CH	8,03	0,28	general corrections
		7,26	1-benzene
CH	8,03	0,69	l - C(=O)N
		0,08	general corrections
CH	8,03	7,26	1-benzene
		0,69	l - C(=O)N
CH	7,63	0,08	general corrections
		7,26	1-benzene
CH	7,63	0,18	l - C(=O)N
		0,19	general corrections
CH	7,63	7,26	1-benzene
		0,18	l - C(=O)N
CH	7,70	0,19	general corrections
		7,26	1-benzene
CH	7,70	0,25	l - C(=O)N
		0,19	general corrections

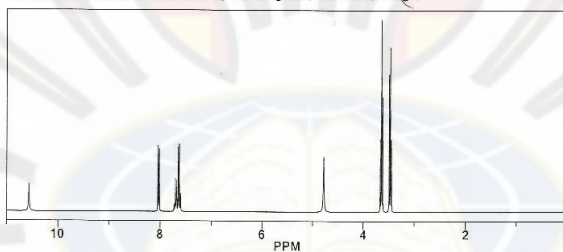
Estimasi $^1\text{H-NMR}$ Senyawa *N*-(bis(2-hydroxyethyl)carbamothioyl)benzamide

ChemNMR ^1H Estimation

N-(bis(2-hydroxyethyl)carbamothioyl)benzamide



Estimation quality is indicated by color: good, medium, rough



Protocol of the ^1H -NMR Prediction:

Node	Shift	Base + Inc.	Comment (ppm rel. to TMS)
OH	4,78	2,00	alcohol
		2,78	general corrections
OH	4,78	2,00	alcohol
		2,78	general corrections
NH	10,57	8,00	sec. amide
		2,57	general corrections
CH	8,03	7,26	1-benzene
		0,69	1-C(=O)N
		0,08	general corrections
CH	8,03	7,26	1-benzene
		0,69	1-C(=O)N
		0,08	general corrections
CH	7,63	7,26	1-benzene
		0,18	1-C(=O)N
		0,19	general corrections
CH	7,63	7,26	1-benzene
		0,18	1-C(=O)N
		0,19	general corrections
CH	7,70	7,26	1-benzene
		0,25	1-C(=O)N
		0,19	general corrections
CH2	3,47	1,37	methylene
		2,20	1 alpha -O
		0,08	1 beta -N-C
		-0,18	general corrections
CH2	3,47	1,37	methylene
		2,20	1 alpha -O
		0,08	1 beta -N-C
		-0,18	general corrections
CH2	3,64	1,37	methylene
		2,12	1 alpha -NC(=S)NR
		0,15	1 beta -O
CH2	3,64	1,37	methylene
		2,12	1 alpha -NC(=S)NR
		0,15	1 beta -O