Perpustakaan Unika

Lampiran 1. Perhitungan *Total Volatile Base* (TVB) dan *Trimethylamine* (TMA).

$$\text{TVB (mg/ 100g)} = \frac{14 \times (a + W) \times \text{ml NaOH 0,01M (blanko-vol 1)} \times \text{N NaOH}}{\text{ml sampel}} \times \frac{100}{b}$$

$$\text{TMA (mg/ 100g)} = \frac{14 \times (a + W) \times \text{ml NaOH 0,01M (vol 2)} \times \text{N NaOH}}{\text{ml sampel}} \times \frac{100}{b}$$

Keterangan :

a : ml asam perklorat yang ditambahkan (30 ml)

W : berat air dalam sampel (gram)

b : berat sampel yang diuji

Perpustakaan Unika

Lampiran 2. Lembar Penilaian (*scoring sheet*) Organoleptik Udang Segar.

Jenis Produk :
Nama :
Tanggal :
Cantumkan kode contoh pada kolom yang tersedia sebelum melakukan pengujian.
Berilah tanda V pada nilai yang dipilih sesuai kode contoh yang diuji.

No	SPESIFIKASI	NILAI	Kode contoh	
1	**KENAMPAKAN**			
	Utuh, bening, bercahaya asli menurut jenis, antar ruas kokoh	9		
	Utuh, kurang bening, cahaya mulai pudar, berwarna asli, antar ruas kokoh	8		
	Utuh, kebeningan hilang, cahaya warna redup, antar ruas kokoh	7		
	Utuh, warna redup, agak pink, noda hitam sedikit sekali, antar ruas mulai agak renggang	6		
	Sedikit cacat, warna asli hilang, noda hitam agak banyak, ruas lepas-lepas, rusak fisik	5		
	Warna berubah merah, noda hitam banyak, kulit mudah lepas dari daging, daging tidak utuh	3		
	Warna merah jelas, dipenuhi noda hitam	1		
2	**BAU**			
	Bau sangat segar spesifik jenis	9		
	Bau segar spesifik jenis	8		
	Bau spesifik jenis netral	7		
	Bau berubah dari netral	6		
	Mulai timbul bau amoniak	5		
	Bau busuk lanjut dan bau asam sulfit (H_2S)	3		
	Bau amoniak dan busuk	1		
3	**DAGING (Warna & Kenampakan)**			
	Elastis, bening dan bercahaya, bau segar manis	9		
	Elastis, agak pudar, bau segar, rasa manis	8		
	Elastis berkurang, agak berair, redup, kulit ari agak berubah, bau netral, rasa agak tawar	7		
	Sepet (rasa alkali amoniak)	6		
	Lunak, bau busuk jelas sekali terasa	5		
	Mulai membubur, bau busuk	3		
	Tidak dapat diterima	1		

Perpustakaan Unika

Lampiran 3. Standar Nasional Indonesia (SNI) Udang Segar (SNI 01-2728-1992).

Udang segar adalah suatu produk olahan hasil perikanan dengan bahan baku udang, yang telah mengalami perlakuan sebagai berikut : pencucian, sortasi, pemotongan atau tanpa pemotongan kepala, pencucian, pendinginan dan pengemasan. Persyaratan yang harus dipenuhi:

Jenis uji	satuan	Persyaratan mutu
a. Organoleptik :		
- Nilai minimal		7
b. Cemaran mikroba :		
- ALT, maksimal	koloni / gram	5×10^5
- *Escherichia coli*	APM / gram	< 3
- *Salmonella* *)	Per 25 gram	Negatif
- *Vibrio cholerae*	Per 25 gram	Negatif
- *Vibrio parahaemoliticus* *)	APM / 0,1 gram	< 0,3

Keterangan :

*) : bila diminta oleh importir

ALT : Angka Lempeng Total

APM : Angka Paling Memungkinkan

Perpustakaan Unika

Lampiran 4. Ketentuan FDA untuk Mengamati Pedagang Ikan.

How can you spot a safe seafood seller?

Anyone who's ever smelled rotting seafood at the fish counter has a pretty good idea of what a poorly run seafood market smells like. But the absence of any strong odor doesn't necessarily mean that the seller is practicing safe food handling techniques.

Based on FDA's Food Code, here are some other points to consider:

- Employees should be in clean clothing but no outerwear and wearing hair coverings.
- They shouldn't be smoking, eating, or playing with their hair. They shouldn't be sick or have any open wounds.
- Employees should be wearing disposable gloves when handling food and change gloves after doing nonfood tasks and after handling any raw seafood.
- Fish should be displayed on a thick bed of fresh, not melting ice, preferably in a case or under some type of cover. Fish should be arranged with the bellies down so that the melting ice drains away from the fish, thus reducing the chances of spoilage.
- What's your general impression of the facility? Does it look clean? Smell clean? Is it free of flies and bugs? A well-maintained facility can indicate that the vendor is following good sanitation practices.
- Is the seafood employee knowledgeable about different types of seafood? Can he or she tell you how old the products are and explain why their seafood is fresh? If they can't, you should take your business elsewhere.

Source: Excerpted from FDA Consumer, November-December 1997: Critical Steps Toward Safer Seafood

Perpustakaan Unika

Lampiran 5. Hasil Pengukuran Mutu Non Sensoris dan Sensoris Udang di tiap Pedagang pada Awal dan Akhir Berdagang.

Pedagang	waktu	Mutu non sensoris			TPC air rendaman (log cfu/g)±sd	Mutu sensoris (nilai ± sd)
		TVB (mg/100g)±sd	TMA (mg/100g)±sd	TPC udang (log cfu/g) ±sd		
A	awal	52.88 ± 12.90	12.56 ± 4.16	5.79 ± 0.06	6.69 ± 0.27	7.82 ± 0.17
	akhir	68.09 ± 5.67	17.51 ± 2.98	6.83 ± 0.67	7.09 ± 0.40	7.17 ± 0.42
B	awal	41.21 ± 6.56	9.73 ± 2.27	5.85 ± 0.08	6.17 ± 0.27	8.10 ± 0.18
	akhir	49.88 ± 6.94	13.62 ± 3.25	6.33 ± 0.15	6.68 ± 0.57	7.63 ± 0.00
C	awal	46.60 ± 3.05	9.99 ± 1.08	5.80 ± 0.57	6.36 ± 0.03	8.07 ± 0.06
	akhir	55.90 ± 3.72	15.39 ± 2.58	6.39 ± 0.07	7.34 ± 0.01	7.33 ± 0.38
D	awal	44.92 ± 5.72	11.59 ± 0.85	5.53 ± 0.14	6.34 ± 0.13	7.23 ± 0.15
	akhir	57.13 ± 3.94	14.59 ± 1.37	6.56 ± 0.07	7.11 ± 0.14	7.00 ± 0.00

Perpustakaan Unika

Lampiran 6. Nilai TVB, TMA dan TPC Mmasing-Masing Perlakuan Penyimpanan Udang Dalam Es bersuhu 4 C selama 30 jam (Simulasi Penyimpanan).

Perlakuan	Jam penyimpanan	TVB (mg/100g) ± sd	TMA (mg/100g) ±sd	TPC (log cfu/g) ±sd
Segar	0	33.25 ± 1.62	7.61 ± 0.31	5.58 ± 0.03
	6	37.50 ± 0.61	10.97 ± 0.61	5.68 ± 0.03
	24	33.25 ± 3.24	7.08 ± 1.62	6.17 ± 0.02
	30	38.56 ± 3.06	11.14 ± 2.76	6.27 ± 0.01
Campuran	0	40.33 ± 1.84	12.36 ± 0.61	7.28 ± 0.06
	6	46.69 ± 2.81	15.21 ± 1.23	7.38 ± 0.08
	24	43.51 ± 1.06	14.15 ± 0.61	7.44 ± 0.00
	30	45.63 ± 3.83	15.21 ± 1.62	7.47 ± 0.01

Perpustakaan Unika

Lampiran 7. Pengolahan Data Statistik TVB dan TMA Simulasi Penyimpanan Udang.

Nilai TVB dan TMA Berdasarkan Waktu Penyimpanan

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
TVB	0	6	36.7883	4.1735	1.7038	32.4085	41.1680	31.8360	41.3868
	6	6	42.0943	5.3553	2.1863	36.4742	47.7143	37.1420	48.8152
	24	6	38.3801	6.0187	2.4571	32.0639	44.6963	29.7136	44.5704
	30	6	42.0943	4.9624	2.0259	36.8866	47.3019	35.0196	49.8764
	Total	24	39.8392	5.3746	1.0971	37.5697	42.1087	29.7136	49.8764
TMA	0	6	9.99297	2.6512	1.0824	7.21067	12.7753	7.4284	12.7344
	6	6	13.0881	2.4812	1.0129	10.4843	15.6920	10.6120	15.9180
	24	6	10.6120	4.0270	1.6440	6.38595	14.8380	5.3060	14.8568
	30	6	13.1762	3.0091	1.2285	10.0184	16.3341	7.9590	16.9792
	Total	24	11.7173	3.2404	.66144	10.3490	13.0856	5.3060	16.9792

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
TVB	Between Groups	129.647	3	43.216	1.616	.217
	Within Groups	534.731	20	26.737		
	Total	664.379	23			
TMA	Between Groups	49.216	3	16.405	1.706	.198
	Within Groups	192.283	20	9.614		
	Total	241.499	23			

Perpustakaan Unika

TVB

Duncan[a]

WAKTU	N	Subset for alpha = .05
		1
0	6	36.788267
24	6	38.380067
6	6	42.094267
30	6	42.094267
Sig.		.118

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

TMA

Duncan[a]

WAKTU	N	Subset for alpha = .05
		1
0	6	9.992967
24	6	10.612000
6	6	13.088133
30	6	13.176233
Sig.		.117

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Nilai TVB dan TMA Berdasarkan Perlakuan.

Group Statistics

	PERLAK	N	Mean	Std. Deviation	Std. Error Mean
TVB	segar	12	35.638633	3.245964	.937029
	camp-2	12	44.039800	3.371028	.973132
TMA	segar	12	9.197067	2.397951	.692229
	camp-2	12	14.237600	1.531637	.442145

Perpustakaan Unika

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TVB	Equal variances assumed	.000	1.000	-6.219	22	.000	-8.401	1.3509	-11.20	-5.600
	Equal variances not assumed			-6.219	21.969	.000	-8.401	1.3509	-11.20	-5.599
TMA	Equal variances assumed	4.658	.042	-6.137	22	.000	-5.041	.82138	-6.744	-3.337
	Equal variances not assumed			-6.137	18.695	.000	-5.041	.82138	-6.762	-3.319

Korelasi Nilai TVB, TMA dan log Jumlah Kepadatan Bakteri (TPC).

Correlations

		TVB	TMA	LOG_TPC
TVB	Pearson Correlation	1.000	.989**	.873**
	Sig. (2-tailed)	.	.000	.005
	N	8	8	8
TMA	Pearson Correlation	.989**	1.000	.845**
	Sig. (2-tailed)	.000	.	.008
	N	8	8	8
LOG_TPC	Pearson Correlation	.873**	.845**	1.000
	Sig. (2-tailed)	.005	.008	.
	N	8	8	8

**. Correlation is significant at the 0.01 level (2-tailed).

Perpustakaan Unika

Lampiran 8. Data Mentah TVB dan TMA Udang Simulasi Peyimpanan

Perlakuan	waktu	ulangan	TVB (mg/100g)	TMA (mg/100g)
udang segar (udang:es=1:1) suhu=4°C	Jam ke-0 (pkl 06.00)	1	35.0196	7.9590
		2	32.8972	7.4284
		3	31.8360	7.4284
	Jam ke-6 (pkl 12.00)	1	37.1420	10.6120
		2	37.1420	10.6120
		3	38.2032	11.6732
	Jam ke-24 (pkl 06.00)	1	33.9584	7.4284
		2	36.0808	8.4896
		3	29.7136	5.3060
	Jam ke-30 (pkl 12.00)	1	40.3256	12.7344
		2	35.0196	7.9590
		3	40.3256	12.7344
Udang campuran 1 (rusak:segar=1:3) (udang:es=1:2) suhu=1°C	Jam ke-0 (pkl 06.00)	1	41.3868	12.7344
		2	41.3868	12.7344
		3	38.2032	11.6732
	Jam ke-6 (pkl 12.00)	1	40.3256	12.7344
		2	46.6928	15.9180
		3	44.5704	14.8568
	Jam ke-24 (pkl 06.00)	1	36.0808	8.4896
		2	40.3256	12.7344
		3	44.5704	15.9180
	Jam ke-30 (pkl 12.00)	1	40.3256	12.7344
		2	35.0196	7.9590
		3	40.3256	12.7344
Udang campuran 2 (rusak:segar=1:3) (udang:es=1:1) suhu=4°C	Jam ke-0 (pkl 06.00)	1	41.3868	12.7344
		2	41.3868	12.7344
		3	38.2032	11.6732
	Jam ke-6 (pkl 12.00)	1	47.7540	15.9180
		2	48.8152	15.9180
		3	43.5092	13.7956
	Jam ke-24 (pkl 06.00)	1	42.4480	13.7956
		2	43.5092	13.7956
		3	44.5704	14.8568
	Jam ke-30 (pkl 12.00)	1	44.5704	14.8548
		2	42.4480	13.7956
		3	49.8764	16.9792
Udang rusak	Jam ke-0 (pkl 06.00)	1	84.8960	22.2852
		2	82.7736	21.2240
		3	63.6720	20.1628

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Lampiran 9. Data Mentah *Total Plate Count* (TPC) Udang Simulasi Penyimpanan

Perlakuan	Waktu	Ulangan	TPC (koloni/gram)	Log TPC
udang segar (udang:es=1:1) suhu=4°C	Jam ke-0 (pkl 06.00)	1	360000	5.5563
		2	400000	5.6021
	Jam ke-6 (pkl 12.00)	1	460000	5.6628
		2	500000	5.6990
	Jam ke-24 (pkl 06.00)	1	1420000	6.1523
		2	1510000	6.1790
	Jam ke-30 (pkl 12.00)	1	1900000	6.2788
		2	1820000	6.2601
Udang campuran 1 (rusak:segar=1:3) (udang:es=1:2) suhu=1°C	Jam ke-0 (pkl 06.00)	1	17500000	7.2430
		2	21100000	7.3243
	Jam ke-6 (pkl 12.00)	1	21500000	7.3324
		2	21000000	7.3222
	Jam ke-24 (pkl 06.00)	1	22800000	7.3579
		2	23100000	7.3636
	Jam ke-30 (pkl 12.00)	1	25300000	7.4031
		2	24800000	7.3945
Udang campuran 2 (rusak:segar=1:3) (udang:es=1:1) suhu=4°C	Jam ke-0 (pkl 06.00)	1	17500000	7.2430
		2	21100000	7.3243
	Jam ke-6 (pkl 12.00)	1	21000000	7.3222
		2	27500000	7.4393
	Jam ke-24 (pkl 06.00)	1	27200000	7.4346
		2	27500000	7.4393
	Jam ke-30 (pkl 12.00)	1	29500000	7.4698
		2	28900000	7.4609
Udang rusak	Jam ke-0 (pkl 06.00)	1	28300000	7.4518
		2	25300000	7.4031

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Lampiran 10. Data Mentah TVB dan TMA Udang Pedagang saat awal dan akhir berdagang.

Jenis pedagang	Waktu	Ulangan hari	ulangan	TVB (mg/100g)	TMA (mg/100g)
Pedagang A	Awal berdagang	1	1	61.5496	13.7956
			2	63.6720	15.9180
Lokasi: Pasar Widosari			3	38.2032	7.4284
		2	1	62.6108	16.9792
			2	56.2436	13.7956
			3	35.0196	7.4284
	Akhir berdagang	1	1	68.9780	18.0404
			2	67.9168	18.0404
			3	57.3048	11.6732
		2	1	73.2228	20.1628
			2	72.1616	19.1016
			3	68.9780	18.0404
Pedagang B	Awal berdagang	1	1	40.3256	9.5508
			2	45.6316	10.6120
Lokasi: Pasar Karang Kembang			3	28.6524	5.3060
		2	1	43.5092	10.6120
			2	42.4480	10.6120
			3	46.6928	11.6732
	Akhir berdagang	1	1	49.8764	12.7344
			2	39.2644	9.5508
			3	59.4272	19.1016
		2	1	50.9376	13.7956
			2	45.6316	11.6732
			3	54.1212	14.8568
Pedagang C	Awal berdagang	1	1	41.3868	7.9590
			2	49.3458	10.6120
Lokasi: Pasar Tanah Mas			3	47.7540	10.6120
		2	1	48.8152	10.6120
			2	47.7540	10.6120
			3	44.5704	9.5508
	Akhir berdagang	1	1	58.3660	16.9792
			2	57.3048	16.9792
			3	56.2436	15.9180
		2	1	60.4884	18.0404
			2	51.9988	12.7344
			1	50.9376	11.6732
Pedagang D	Awal berdagang	1	1	53.0600	12.7344
			2	50.9376	12.2038
Lokasi: Pasar Tanah Mas			3	39.2644	11.6732
		2	1	42.4480	10.6120
			2	40.3256	10.6120
			3	43.5092	11.6732

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Akhir berdagang	1	1	58.3660	14.8568
		2	61.5496	15.9180
		3	58.3660	15.3874
	2	1	56.2436	13.7956
		2	58.3660	15.3874
		3	49.8764	12.2038

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Lampiran 11. Data Mentah TPC Udang dan Air Rendaman Pedagang Saat Awal dan Akhir Berdagang

Jenis pedagang	waktu	Ulangan hari	Ul	TPC udang (koloni/g)	TPC air rendaman (koloni/g)	Log TPC udang	Log TPC Air rendaman
Pedagang A	Awal	1	1	650000	2960000	5.8129	6.4713
			2	520000	2880000	5.7160	6.4594
Lokasi: Pasar Widosari		2	1	610000	9700000	5.7853	6.9868
			2	730000	6900000	5.8633	6.8388
	Akhir	1	1	22200000	23600000	7.3464	7.3729
			2	29300000	27500000	7.4669	7.4393
		2	1	1890000	3800000	6.2765	6.5798
			2	1710000	9700000	6.2330	6.9868
Pedagang Bumi Manusia	Awal	1	1	700000	2700000	5.8451	6.4314
			2	660000	2390000	5.8195	6.3784
		2	1	610000	910000.0	5.7853	5.9590
			2	930000	810000.0	5.9685	5.9085
Lokasi: Pasar Karang Kembang	Akhir	1	1	1290000	12100000	6.1106	7.0828
			2	2650000	18000000	6.4232	7.2553
		2	1	2150000	1320000	6.3324	6.1206
			2	2750000	1890000	6.4393	6.2765
Pedagang C	Awal	1	1	1850000	2130000	6.2672	6.3284
			2	1960000	2210000	6.2923	6.3444
Lokasi: Pasar Tanah Mas		2	1	148000	2440000	5.1703	6.3874
			2	283000	2350000	5.4518	6.3711
	Akhir	1	1	2110000	21200000	6.3243	7.3263
			2	2230000	22600000	6.3483	7.3541
		2	1	2550000	21300000	6.4065	7.3284
			2	2960000	22300000	6.4713	7.3483
Pedagang D	Awal	1	1	262000	2960000	5.4183	6.4713
			2	266000	1440000	5.4249	6.1584
Lokasi: Pasar Tanah Mas		2	1	380000	2210000	5.5798	6.3444
			2	500000	2360000	5.6990	6.3729
	Akhir	1	1	4200000	10300000	6.6232	7.0128
			2	3100000	9600000	6.4914	6.9823
		2	1	3300000	18800000	6.5185	7.2742
			2	4200000	14300000	6.6233	7.1553

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Lampiran 12. Data Mentah Nilai Organoleptik Udang Pedagang Saat Awal dan Akhir Berdagang

Jenis pedagang	waktu	ulangan	kenampakan	bau	daging	Nilai total
Pedagang A	Awal	1	7.70	7.70	7.90	7.70
		2	7.55	8.00	8.27	7.94
Lokasi:	Akhir	1	7.10	6.40	7.10	6.87
Pasar Widosari		2	7.00	7.55	7.82	7.46
Pedagang B	Awal	1	8.20	8.10	8.40	8.23
		2	7.80	8.00	8.10	7.97
Lokasi:	Akhir	1	7.60	7.40	7.90	7.63
Pasar Karanganyar		2	7.30	7.80	7.80	7.63
Pedagang C	Awal	1	7.50	8.20	8.40	8.03
		2	8.33	7.67	8.33	8.11
Lokasi:	Akhir	1	7.30	7.60	7.90	7.60
Pasar Tanah Mas		2	6.00	7.50	7.67	7.06
Pedagang D	Awal	1	6.38	7.63	7.38	7.13
		2	7.13	7.63	7.25	7.33
Lokasi:	Akhir	1	6.25	7.63	7.13	7.00
Pasar Tanah Mas		2	6.88	7.13	7.00	7.00

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Lampiran 13. Data TVB, TMA dan TPC Udang Keseluruhan (total), *Edible P* dan *Non Edible Portion* pada Udang Segar dan Tidak Segar.

Jenis udang	*portion*	Ulangan	TVB (mg/100g)	TMA (mg/100g)
Udang segar	***Edible***	1	36.1904	11.7102
		2	36.7273	11.7102
		3	31.9368	8.5165
	Total	1	32.8972	9.0202
		2	30.7748	7.4284
		3	29.7136	7.9590
	Non edible	1	32.3154	8.4762
		2	34.4344	9.5357
		3	36.5534	10.5952
Udang tidak segar	***Edible***	1	54.2926	11.7102
		2	43.6470	10.6456
		3	42.5824	9.5810
	Total	1	42.4480	11.6732
		2	45.6316	12.7344
		3	38.2032	10.0814
	Non edible	1	42.3808	10.5952
		2	50.8570	11.6547
		3	53.5058	11.6547

Jenis udang	*portion*	Ulangan	TPC (koloni/gram)	Log TPC
Udang segar	***Edible***	1	57000	4.7559
		2	83000	4.9191
	Total	1	96000	4.9823
		2	71000	4.8513
	Non edible	1	177000	5.2480
		2	205000	5.3118
Udang tidak segar	***Edible***	1	1860000	6.2695
		2	1750000	6.2430
	Total	1	14300000	7.1553
		2	20500000	7.3118
	Non edible	1	29800000	7.4742
		2	28600000	7.4564