



**MICROBIOLOGICAL QUALITY OF RETAILED
GREEN SALADS IN LOS BAÑOS, LAGUNA,
PHILIPPINES**

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Green Salads



- address the health and wellness need of the population
- drawbacks of minimally processing

Fruit & Vegetable Intake



Intake of approximately 400 grams per day or 146 kg/year of fruits and vegetables – WHO

Intake of Filipinos – 147 grams per day - FNRI

Reasons cited for low consumption

- seasonal vegetable production
- frequent rainfall and typhoons
- decline in the yield and quality of production of vegetables
- culture in which, vegetables are seen as simple accompaniment of protein dish and seldom served as a dish itself
- perception that vegetables are only for the poor

Health Benefits



One serving of green salads

- ❑ one cup of lettuce, half cup of carrots, quarter cup of cucumber and tomatoes plus seasonings
- ❑ approximately 7 percent and 10 percent of men and women's daily fiber intake, respectively
- ❑ Lettuce, generally are good sources of vitamins A, B6, C and K, of folic acid, niacin, riboflavin, iron and potassium

Green Salad



- Stored in chilled temperature of 5-8 Celcius for 2-4 days packed in plastic containers and paper box lined with plastic

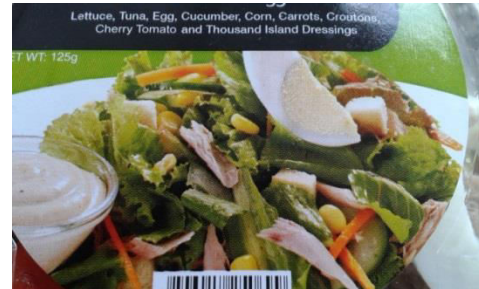




Table 1. Proximate composition (%) and energy content (kcal) of fresh green ready-to-eat salads stored at temperature range of 5.5-8 °C sold in stores in Los Banos, Laguna

Composition	Sample						
	1	2	3	4	5	6	7
Moisture	73.27 ^d	82.92 ^c	87.83 ^b	74.26 ^d	92.77 ^a	85.29 ^{cb}	88.71 ^b
Ash	3.11 ^a	1.72 ^{dc}	2.33 ^{bc}	1.5 ^d	0.46 ^e	3.52 ^{ba}	0.59 ^e
Crudefat	3.20 ^{ba}	1.98 ^c	2.50 ^b	2.97 ^{ba}	0.03 ^d	3.64 ^a	1.85 ^c
Crude protein	5.29 ^b	2.71 ^d	3.19 ^c	11.79 ^a	0.95 ^f	1.49 ^e	5.06 ^b
Crude fiber	0.87 ^{dc}	0.78 ^{de}	1.06 ^{ba}	0.64 ^e	0.75 ^{de}	1.13 ^a	0.95 ^{bc}
Carbohydrate	14.26 ^a	9.89 ^b	3.09 ^d	8.84 ^b	5.04 ^{dc}	5.93 ^c	3.38 ^d
Energy	107.00 ^a	68.22 ^b	47.62 ^c	102.25 ^a	24.23 ^d	62.44 ^b	50.41 ^c

Means with the same letter within a row are not significantly different

These results were relatively similar to the USA Nutrition fact reports of green salads served in restaurants such as Sbarro (approximately 78 calories/100 g serving) and McDonalds (approximately 61 calories/100 g serving).

Food Safety



Table 3. Aerobic colony counts, coliform and E. coli bacterial contents of fresh green ready-to-eat salads stored at temperature range of 5.5-8 °C sold in stores in Los Banos, Laguna

Test	Sample						
	1	2	3	4	5	6	7
Aerobic Plate Count (CFU/g)	3.4×10^6	2.7×10^4	5.1×10^6	3.8×10^7	5.6×10^7	6.6×10^7	4.0×10^4
Coliform (MPN/g)	> 1100	1100	1100	>1100	>1100	>1100	1100
E.coli (MPN/g)	6.1	0	3	7.2	7.2	3	0

Food Safety



Table 4. Filth content of fresh green ready- to- eat salads stored at temperature range of 5.5-8 °C sold in stores in Los Banos, Laguna

Type of Filth	Sample						
	1	2	3	4	5	6	7
Insect	0	0	4	4	3	1	0
Fiber	0	0	1	0	1	0	2

Control Measures



- ✓ Use of clean water
- ✓ Provision of sanitary facilities
- ✓ Hygienic practices among food workers
- ✓ Proper temperature control and hygienic packing and transport procedures and facilities.

Conclusion



- High variability in the proximate composition of samples
- The microbial load of sample green salads were unsatisfactory
- Verify the sources and extent of contamination



THANK
YOU!

