

12-5-2014

A Measure of the Amount of Vitamin K Leached Out from Cooked Greens in Potlicker

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Recommended Citation

Anderson, Douglas; Bobka, Kara; Johnson, Matthew; Manion, Chelsea; Tesfaye, Samuel; Widder, Rebecca; and Willoughby, Joshua, "A Measure of the Amount of Vitamin K Leached Out from Cooked Greens in Potlicker" (2014). *Pharmacy and Nursing Student Research and Evidence-Based Medicine Poster Session*. 63.

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A MEASURE OF THE AMOUNT OF VITAMIN K LEACHED OUT FROM COOKED GREENS IN POTLICKER

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STATEMENT OF THE PROBLEM

Background:

- Cooking greens is a common practice in the Southern United States to create a broth or potlicker.
- Vitamin K content is fat soluble and found in greens.
- Changes in dietary vitamin K intake influences warfarin's mechanism of action in the body.
- Patients taking warfarin must closely regulate their intake of vitamin K.
- Study seeks to find if potlicker contains significant amounts of vitamin K that interact with warfarin.

Significance of the Problem:

- No data exists documenting the amount of vitamin K found in potlicker, leached from cooked greens.
- Study seeks to explore this, to provide information that will be beneficial to both medical professionals and warfarin patients.
- This will enable healthcare providers to counsel patients on warfarin, who consume potlicker.

OBJECTIVE

To determine if the amount of vitamin K leached from cooked greens into potlicker is dependent upon the amount of fat in the cooking solution and if the amount vitamin K leached depends upon the type of green being cooked.

HYPOTHESES

Null Hypothesis (H₀1): There is no statistically significant difference between the amount of vitamin K leached from cooked greens into potlicker and the amount of fat in the cooking solution.

Alternative Hypothesis (H_A1): There is a statistically significant difference between the amount of vitamin K leached from cooked greens into potlicker and the amount of fat in the cooking solution.

Null Hypothesis (H₀2): There is no statistically significant difference between the amount of vitamin K leached from cooked greens into potlicker and the type of green.

Alternative Hypothesis (H_A2): There is a statistically significant difference between the amount of vitamin K leached from cooked greens into potlicker and the type of green.

PROPOSED METHODS

Data Collection:

Table 1: Sample Categories for the Comparison of Vitamin K Leached

	Group 1 No Fat (0g/L)	Group 2 Low (1g/L)	Group 3 Medium (2g/L)
A Collard (5g)	5g + 0g/L + 1L H ₂ O	5g + 1g/L + 1L H ₂ O	5g + 2g/L + 1L H ₂ O
B Mustard (5g)	5g + 0g/L + 1L H ₂ O	5g + 1g/L + 1L H ₂ O	5g + 2g/L + 1L H ₂ O
C Turnip (5g)	5g + 0g/L + 1L H ₂ O	5g + 1g/L + 1L H ₂ O	5g + 2g/L + 1L H ₂ O
D Spinach (5g)	5g + 0g/L + 1L H ₂ O	5g + 1g/L + 1L H ₂ O	5g + 2g/L + 1L H ₂ O

Measurement: To determine the vitamin K content in each of the prepared samples, High Performance Liquid Chromatography (HPLC) will be employed as follows:

A supplement containing a known amount of vitamin K will be extracted to verify the reliability of the HPLC machine.

2 mL of each extracted potlicker sample will be combined with hexane and ethyl acetate. The organic layer will be washed with a methanol and water mixture.

Each sample will be vortexed for 15 minutes and centrifuged for 5 minutes.

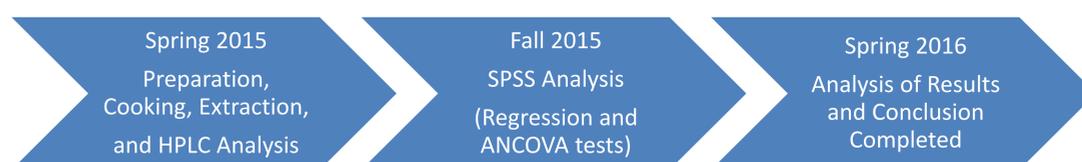
Supernatant will be evaporated to dryness using a stream of nitrogen. Methanol will be added to the sample to redissolve the solution.

Solution will be injected into the HPLC machine for analysis.

PROPOSED ANALYSES

- Data will be analyzed primarily via SPSS, where *a priori* alpha will be set at 0.05.
- Sigma Plot will be implemented to display simple linear regressions and thereby aide in identifying correlations between variables.
- ANCOVA tests will be used to compare and contrast the four types of greens.
- All data will be stored in Excel spreadsheets for further use.

PROJECT TIMELINE



LIMITATIONS

- Mono-operation bias due to sole reliance on HPLC to analyze vitamin K content in potlicker.
- Instrumentation is an issue because there could be changes in the HPLC over time during the study.
- Data collectors may become more or less proficient at data collection over time.
- Data cannot answer exactly how potlicker will affect patient's INR levels, who are on warfarin.
- Preparation of greens varies in real life from cook to cook.

FUTURE DIRECTIONS

The data collected in this study may be used in future research in assessing the clinical effects of potlicker on the INR levels of patients taking warfarin. This information will assist medical providers and patients in their knowledge of potlicker's effects on formation of thromboembolisms in patients taking warfarin.

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