# Phytochemical Screening of Lettuce, Spring onion and Spinach cultivated at Farin Gada Farm Land

**Shittu Abubakar Muhammad[1], Ansar Bilyamin Adam[2], Ushie Onumashi Afi PhD[3] K. B. Ahmad[4] Abdullahi Jabir Abubakar[5], Nasir Ado Muhammad[6]**

*Department of Chemistry University of Jos[1,5]*
*Department of Chemical Science Federal University Wukari[2, 3]*
*Department of Chemistry Federal University Lokoja[4]*
*Department of Pure and Industrial Chemistry Bayero University, Kano[6]*
***Correspondent author**: ansarbilyamingmail.com*

**Abstract**

Lettuce, spring and spinach are leafy vegetables with great health benefits to human beings, based on their nutritional contents which produce vitamins that help strengthen bones and minerals that benefit the skin. This study investigates the metabolites present in Lettuce and spinach cultivated at Farin Gada farm. Two metabolites were tested, which were tannins and saponins. The results of the study showed the presence of tannin and saponin in the lettuce and spinach while saponins were absent in spring onion samples cultivated at Farin Gada farm-land.

**Keywords**: - lettuce, spinach, spring onion, phytochemical, tannin and saponin.

## Criblage phytochimique de la Laitue, de l'oignon vert et des épinards cultivés sur les terres agricoles de Farin Gada

**Résumé**

*La laitue, oignon vert et les épinards sont des légumes à feuilles très bénéfiques pour la santé des êtres humains, en raison de leur contenu nutritionnel qui produit des vitamines qui aident à renforcer les os et des minéraux bénéfiques pour la peau. Cette étude examine les métabolites présents dans la laitue et les épinards cultivés à la ferme Farin Gada. Deux métabolites ont été testés, qui étaient des tanins et des saponines. Les résultats de l'étude ont montré la présence de tanin et de saponine dans la laitue et les épinards, tandis que les saponines étaient absentes dans les échantillons d'oignons vert cultivés sur les terres agricoles de Farin Gada.*

**Mots-clés** : - laitue, épinard, oignon vert, phytochimique, tanin et saponine.

الخس والزنبرك والسبانخ هي خضروات مورقة لها فوائد صحية كبيرة للبشر، استناداً إلى محتوياتها الغذائية التي تنتج فيتامينات تساعد على تقوية العظام والمعادن التي تفيد الجلد تبحث هذه الدراسة في المستقلبات الموجودة في الخس والسبانخ المزروعة في مزرعة فارن أظهرت نتائج الدراسة وجود التانين والصابونين في الخس والسبانخ .غدا تم اختبار اثنين من المستقلبات، وهما العفص والصابونين .بينما كانت الصابونين غائبة في عينات البصل الأخضر المزروعة في المزرعة

## Introduction

The nutritive value of lettuce is very high but rests largely upon a good content of minerals and moderate storage of vitamins in the human diet plus a substantial amount of fiber and that of water. Lettuce is popular for its delicate, crispy, texture and slightly bitter taste in fresh condition. It also contains protein, carbohydrates and vitamin C. It is usually used as a salad with tomato, carrot, cucumber or other salad vegetables. It is often served alone or with dressing. Its nutritive value is not spoiled. Moreover, it is anodyne, sedative, diuretic and expectorant [1].

The term "vegetable" is defined as "plants cultivated for food or as the edible part or parts

of such plants" and includes some fruits and possibly legumes too. (These include petioles like celery, *Apium graveolens* which belongs to Dulce group), entire leaves (like lettuce, *Lactuca sativa)*, immature fruits (like cucumber, *Cucumis sativus*), roots (like carrot, *Dacus carota*), and specialized structures such as bulbs (like onion, *Allium cepa* which belongs to Cepa group) and tubers like white potato, *Solanum tuberosum* [2].

Onions (*Allium cepa* L.) are bulbous vegetables from the Liliaceae family, important
in terms of domestic consumption and export. Onions are grown mainly as food materials. They are highly valued for their flavor and their nutritional value.
Onion bulb which may be red, white or yellow, is consumed in its tender state, raw, ripe, pickled or in the form of powder. The bulbs are boiled and used in soups and stews, fried or eaten raw. They are also preserved in the form of pickles. Onion leaves are also used in salads and soups [3].
Spinach, or "round leaf spinage", is a staple of the early American vegetable gardens. It is a relatively quick-growing vegetable and easy to maintain. Spinach is in the classification system Family Amaranthaceae. *Spinacia oleraceae* is its official scientific classification name. Within Amaranthaceous there are about 102 genera and 1400 species worldwide. It is within the family of leafy green vegetables, referred to as „greens" or "potherbs", because they were historically cooked before eating. Spinach ranges in color from light to dark green and comes in two general types: the crinkle leaf variety and the smooth leaf variety, although there are varieties that contain characters of both, known as "semi-Savoy Spinach" [4].

## Materials and methods

### *Materials*

Distilled water, ferric chloride ($FeCl_3$), hydrochloric acids (HCl), (sigma Aldrich). All reagents were used as received.

### *Sampling Area*

The Farin Gada vegetable garden is located at Jos North Local Government, Plateau State. The vegetable garden is situated along the river band that is sourced from river Dilimi. The river is used for irrigating the planted crops and vegetables in the garden. The vegetable produced at Farin Gada vegetable garden is one of the largest and best vegetables in Plateau state and Nigeria at large. Jos – North local government is located at the extreme north of Plateau State on Latitudes $09^0$ $53^1$ and $09^0$ $59^1$ North, and Longitudes $08^0$ $51^1$ and $09^0$ $02^1$ East. It shares a boundary to the North with Toro Local Government Area of Bauchi State; to the South with Jos-South Local Government area; to the North-East with Jos-East Local Government Area; and to the West with Bassa Local Government Area. Jos-North Local Government enjoys a temperate climate with average temperatures of between $28^0$C ($81.7^0$F) maximum and $11^0$C ($51.7^0$F) minimum. It covers a total land area of 291 $km^2$ (112 sq mi) with the 2006 provisional population census figure of 429,300 people. The warmest temperatures usually occur in the dry season months of March and April. Similarly, Jos-North Local Government is characterized by a mean annual rainfall of between 1317.5mm (131.75cm) and 1460.00mm (146.0cm), mostly from May to August. The Onset and Cessation of rainfall in Jos-North are experienced in April (±15 days in April), and October (±15 days in October) respectively. The relative humidity is characterized by a marked seasonal variation

### *Samples Collection*

Vegetables samples of lettuce and spinach were obtained from farms within the Farin Gada vegetable garden. They were taken to the Department of Plant Science and Biotechnology, University of Jos for identification. The samples were air-dried for six weeks. The vegetable leaves and fruits were harvested, destalked, and washed with clean cold tap water.

***Figure1.lettue(Lactucasativa*)**

*Fig 2; spring onion (Allium cepa L.)*

*Figure 3.0; Spinach (S. Oleracea)*

***Sample Preparation***

Samples were crushed and powdered using a pistol and mortar and kept in air-tight containers for further analysis.

***Determination of Tannin in Lettuce, Spinach and Spring onion***

2ml of the powdered sample plus a few drops of 10% ferric chloride ($FeCl_3$) to give a deep bluish or greenish color is the positive result and the absence of the deep color is a negative result [5].

***Determination of Saponin in Lettuce, Spinach and Spring onion***

1ml of the powdered sample was added to few drops of 10% ferric chloride ($FeCl_3$),4ml of distilled water and vigorously shaken. The formation of froth indicates the presence of saponin [5].

**Result**

Table 1: ***Phytochemical Analysis of vegetable from Farin Gada Vegetable Farm***

| Sample | Tannin | Saponin |
|---|---|---|
| Lettuce | + | ++ |
| Spinach | + | ++ |
| Spring onion | + | - |

Key: - = Absent, + = present, ++ = moderately.

**Discussion**

The phytochemical Analysis of the vegetable of the Farin Gada Vegetable farm reveals that the positive sign (+) is the presence of both Tanin and saponin, ++ sign is the moderately presence of both the tannin and saponin. while the negative sign (-) indicates the absence of the tanin or saponin. Phytochemical screening shows that there is the presence of tannin in lettuce, spring onion, and spinach, while saponin was absent in the spring onion sample

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