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Short Communication

Comparism of three Phytochemical Constituents of the Leaf Extracts of three varieties of *Capsicum Annum* in Awka, Anambra State, Nigeria in relation to their Medicinal Value

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Abstract

The quest to have natural elements that can be incorporated into medicine is very high especially in developing countries. This research was conducted to compare the quantities of three phytochemicals; tannin, alkaloids and flavonoids in the leaves of three varieties of Capsicum annum. These phytochemicals are medicinal in treatment of some ailments. At the end of the experiment, it was observed that Nsukka variety of Capsicum annum has the highest tannin, alkaloids and flavonoids, having the mean figure of 1.83, 5.82 and 3.86 respectively. Again, the tannins in Atarugu variety (1.76) are greater than that of Otuocha (1.41) variety, although, the alkaloids and flavonoids in Otuocha (5.75 and 3.77) are greater than that in Atarugu variety (4.74 and 3.41). From the research, it was observed that Nsukka variety of Capsicum annum will be more medicinal compared to Atarugu and Otuocha varieties.

Keywords: *Capsicum annum*, tannins, alkaloids and flavonoids.

Introduction

The genus, *Capsicum*.L. belongs to the family Solanaceae (Night shade) members. Members of Solanaceae are mostly herbs while some others are climbers[1]. The family contains about 90 genera and nearly 3000 species[2]. Vidyyartie and Tripatha[3]. *Capsicum* consists approximately of 20-27 species[4], five of which are domesticated which include the *Capsicum annum*, *Capsicum baccatum*, *Capsicum chinense*, *Capsicum frutescens* and *Capsicum pubescens*[5]. *Capsicum* species can be eaten raw or cooked. Those used in cooking are generally varieties of *Capsicum annum* and *Capsicum frutescens* species. In Nigeria, *Capsicum* species are rated third in importance among the cultivated vegetables[6]. They are widely cultivated because of their spicy nature, vegetable, medicine and nutritional value.

Plants extract are known to contain phytochemical compounds which have medicinal effects accumulated by plants organic substances[7]. Adesokan *et al.*[8] reported that the medicinal properties of plants could be based on the antioxidant, antimicrobial and antipyretic effects of the phytochemicals in them.

Phytochemical constituents are chemical compounds formed during the plants normal metabolic processes. These chemicals are often referred to as "secondary metabolites", of which there are several classes including tannins, alkaloids and flavonoids[7,9]. Most of these phytochemical constituents are potent bioactive compounds found in plant parts which are precursors, for the synthesis of useful drugs[10]. Many physiological activities such as stimulation of phagocytic cells, host medicated tumor activity and wide range of anti-infective action have been assigned to tannins[9]. Alkaloid production is a characteristic of all plant organs. They exhibit marked physiological activity when administered to animals[9]. Alkaloids are often toxic to man and many have physiological activities, they are widely use in medicine for the development of drugs[7,11,12]. In recent times, plant flavonoids have attracted attention as potentially important dietary factor in cancer as chemo-protective agents[13,14]. They show anti-allergic, anti-inflammatory[15], anti-microbial and anti-cancer activities. In terms of anti-cancer activity, they inhibit the initiation, promotion and progression of tumors[9,16]. This work was carried out to find out which among the three varieties of *Capsicum annum* leaves has the highest phytochemicals.

Material and Methods

The fresh plant leaves were oven dried for 2 days at 70^0C. Leaves were sliced before drying. The dried samples were grinded to a fine powder using corona grinding machine. The dried powdered samples were used for the analysis. Alkaloid determination was done using the alkaline precipitation gravimetric method described by Harborne J.B.[7]. The flavonoid was done using the acid alkaline test described by Harborne[7]. While the tannin was done using the ferric chloride test described by Harborne[7]. These phytochemicals were compared and the results were subjected to analysis of variance, the specific differences in treatment means were determined using Least Significant Difference (LSD)[17].

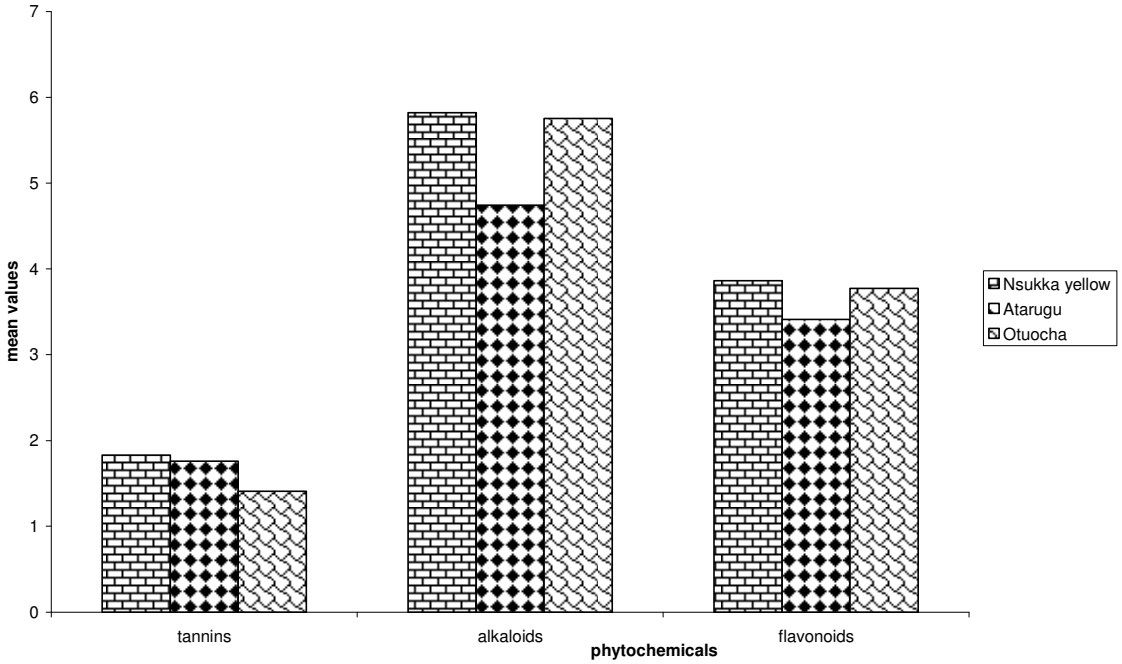

Figure-1
Mean value of phytochemicals of Capsicum annum

Results and Discussion

From the analysis it was observed that there was significant difference in the phytochemical constituents of the three *Capsicum annum* varieties under study.

Table 1 showed the mean constituents of Alkaloids, Tannin, flavonoids in the leaves of the three varieties of *Capsicum annum*.

Table-1
Mean constituents of Alkaloids, Tannin and Flavonoids in the laves of three varieties of *Capsicum annum*

Varieties	Tannins	alkaloids	flavonoids
Nsukka yellow	1.83	5.82	3.86
Atarugu	1.76	4.74	3.41
Otuocha	1.41	5.75	3.77

Discussion: From the result above, it was observed that Nsukka yellow variety of *Capsicum annum* has the highest tannins, alkaloids and flavonoids in the leaf, having the figures as; 1.83, 5.82 and 3.86 as seen in table 1 and figure 1. Again the tannins in Atarugu variety (1.76) are greater than that of Otuocha (1.41) variety. While the alkaloids and flavonoids in Otuocha (5.75 and 3.77) are greater than that in Atarugu variety (4.74 and 3.41). From the result it can be stated that Nsukka variety of *Capsicum annum* is more medicinal than other two varieties studied. The leaf extract of the *Capsicum annum,* especially Nsukka variety can be used in the production of drugs that will be used in the treatment of certain illnesses as stated by Harbone[7,11,12].

Conclusion

The result above shows that Nsukka variety has the highest tannins, alkaloids and flavonoids. This implies that Nsukka variety is more potent in the production of certain drugs that will help to fight against microbes, especially the drugs that will be used in the treatment of cancer.

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