



Original Research Article

Determination of vitamin composition of *Dissotis rotundifolia* leaves

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A B S T R A C T

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The vitamin compositions of *Dissotis rotundifolia* leaves were investigated using spectrophotometric methods. The result revealed high concentrations (mg/100g) of retinol (7.19 ± 1.18), cholecalciferol (7.07 ± 0.08), tocopherol (3.27 ± 0.02), and thiamine (2.67 ± 0.07), with low concentrations (mg/100g) of pyridoxine (0.81 ± 0.05), niacin (0.54 ± 0.02), riboflavin (0.16 ± 0.01), ascorbic acid (0.31 ± 0.02), phyloquinone (0.08 ± 0.00), and cobalamin (0.05 ± 0.00). The high concentrations of some of the vitamins indicate that *Dissotis rotundifolia* leaves could serve as a good source of some vitamins in human nutrition.

Introduction

The contribution of different species of plant parts to health status of man cannot be over-emphasized. Various plants in Nigeria have served as sources of vitamins, proteins, fats and carbohydrates. They become important when their functions are considered in human body (Adegoke *et al.*, 2006). The absence of some vitamins in the body can lead to primary and secondary deficiency diseases. Most of these plants are used to cure some of these diseases (Lawal *et al.*, 2010)

Dissotis rotundifolia triana, a native of tropical Africa, belongs to the *melastomataceae* family (Wagner *et al.*, 1990) and common names include pink lady (English), ebafo (Binin), and awede (Yoruba). It is a versatile perennial slender creeping herb with prostrate or ascending

stems up to 40cm high, rooting at the nodes and producing seeds and stolons. Traditionally, in various parts of tropical Africa, it has various uses. In Nigeria, the plant is used mainly for the treatment of rheumatism and painful swellings, and the leaf decoction is used to relieve stomach ache, diarrhea, dysentery, cough, conjunctivitis, and circulatory problems. It is used in East Africa for the treatment of bilharzias. In Cameroon, the leaves are used for dysentery (Noumi and Yomi, 2001). Bioactive chemical compounds found naturally in plants work with nutrients and dietary fibre to protect against diseases (John, 1996, and Craig, 1999).

Some sources state that sixteen chemical elements are required to support human biochemical process by serving structural

and functional roles as well as electrolytes. Most dietary elements are of relatively low atomic weight. Vitamins are organic substances necessary for metabolism. Deficiency of vitamins can cause serious human health diseases and sometimes, small concentrations are required for maintenance of good human health (Hussian *et al.*, 2006).

Hence this research was aimed at studying the quantitative vitamin compositions of *Dissotis rotundifolia* leaves that make them usable for curing some diseases.

Materials and Methods

Materials

The leaves of *Dissotis rotundifolia* (pink lady) were collected from Mgbaluku, Izzi L.G.A, Ebonyi State, Nigeria.

Methods

Determination of Vitamin Contents

The official methods of Association of Analytical Chemists (AOAC) (1990) and Antonelli (2002) were used.

Results and Discussion

The quantitative determination of vitamin composition of *Dissotis rotundifolia* leaf showed that the plant is rich in some vitamins. The result showed high levels of retinol, tocopherol, cholecalciferol, thiamine and low levels of pyridoxine, niacin, riboflavin, cobalamin, ascorbic acid and phylloquinone.

The concentration of retinol in *Dissotis rotundifolia* leaves was higher than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*, but lower than the result obtained by Atangwho *et al.*

(2009) from the leaves of *Azadirachta indica*. The presence of retinol in high concentration implies that the leaves are good for growth and development, maintenance of immune system and good vision (Tanumihardjo, 2011).

The result of the analysis showed the presence of tocopherol. The concentration of tocopherol in this leaves were higher than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*, but close to the result obtained by Atangwho *et al.*, (2009) from the leaves of *Azadirachta indica*.

Cholecalciferol is also present in high amounts in the leaves of *Dissotis rotundifolia*. This is close to the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*. This indicates that the leaves of the plant is potent in the maintenance of bone health (Rosse *et al.*, 2011).

The analysis revealed also high concentration of thiamine. The concentration of thiamine in the leaves are higher than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*, and also higher than the result obtained by Ogbonna *et al.* (2013) from the leaves of *Tetracarpidium conophorum*. Thiamine functions as coenzyme in the metabolism of carbohydrate and branched chain amino acids Makarchikov *et al.*, (2003).

The result showed that the leaves contained appreciable amount of pyridoxine. The concentration is close to the result obtained by Ogbonna *et al.* (2013) from the leaves of *Tetracarpidium conophorum*, but lower than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*.

There is also appreciable amount of niacin

and ascorbic acid. The concentration of niacin is comparable to the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*, and also the same as the result obtained by Atangwho *et al.* (2013) from the leaves of *Azadirachta indica*. The concentration of ascorbic acid is lower than that obtained by Ogbonna *et al.* (2013) from the leaves of *Tetracarpidium conophorum*, and also lower than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*. The substantial amount of ascorbic acid implies that the leaves have an antioxidant property.

The result also revealed low amounts of riboflavin, pyloquinone, and cobalamine.

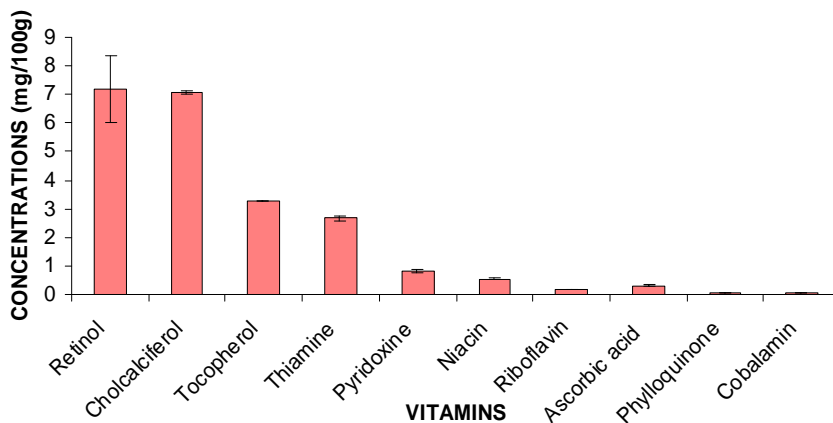
The concentration of riboflavin is close to the result obtained by Atangwho *et al.*, (2009) from the leaves of *Azadirachta indica*, but lower than the result obtained by Olayiwola (2013) from the leaves of *Bambusa vulgaris*. The cobalamin concentration of the leaves was lower than the result obtained by Ogbonna *et al.* (2013) from the leaves of *Tetracarpidium conophorum*. Pyloquinones are known to take part in post translational modification as cofactor in carboxylation of vitamin K dependent proteins (Gerald *et al.*, 2009).

The results indicate that the leaves of *Dissotis rotundifolia* contain substantial amounts of some vitamins

Fig.1 Diagram of *Dissotis rotundifolia* leaves (Morris, 1999)



Fig.2 Vitamin concentrations (mg/100g) of *Dissotis rotundifolia* leaves



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