



## *Okoubaka aubrevillei*; Occurrence, Myth, Ethno-Medicinal Properties, and Other Uses; Mini Review

David G. Oke<sup>1, 2\*</sup>, David O. Adekunle<sup>1</sup>, Idowu A. Obisesan<sup>3</sup><sup>1</sup>Industrial Chemistry Programme, College of Agriculture, Engineering and Science, Bowen University, Iwo, Osun State, Nigeria<sup>2</sup>Laboratory for Chemical Technology, Department of Innovation Engineering, University of Salento, Lecce, Italy<sup>3</sup>Pure and Applied Biology Programme, Bowen University, Iwo, Osun State, Nigeria.

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### ABSTRACT

*Okoubaka aubrevillei*, known as ‘*igi nla*’ in Yoruba (Nigeria) and ‘*oku baku*’ in Anyin (Ivory Coast) is the largest specie in the *Santalaceae* family. It is a west African tropical hardwood and a forest tree which attains height up to 40 m. The tree means different things to different peoples resulting to different beliefs and myths around it. One of it is the belief that it is a strange tree with magical powers. The tree is uncommon in the forest and is believed by the locals in the southwest of Nigeria to be monoecious. *Okoubaka aubrevillei* is a hemiparasite and deciduous tree and considered a trophophyte among other uses. It is crucial to do a review on this tree due to all the important attributes attached to it, particularly in western Africa. This narrative mini review aims to look at *Okoubaka aubrevillei* at a glance; its occurrence, the truth around the myths and its medicinal properties as it is believed to cure all ailments. The review was based on literature search from PubMed online database, Sciondirect.com and Goggle scholar. It covers from 1987 to 2024. The results showed that few of these myths are correct while many are not. A few of the medicinal assertions are also correct but it is not true that it cures all ailments. This is the first review to the best of the authors’ knowledge on the subject matter which will go a long way in contributing to literatures on this particularly important African tree.

**Keywords:** *Okoubaka aubrevillei*, ‘*Igi nla*’, Myth, Ethnomedicinal, Hemiparasite, Trophophyte.

### Introduction

*Okoubaka aubrevillei* is the largest species in the *Santalaceae* family, it is a large forest tree with fruits, attains heights up to 40m and occurs in the west African rain forest (Figure 1).<sup>1</sup> The trees are mostly found in openings of some forests of west Africa and are treated sacredly by locals in the western region of Nigeria and some parts of west Africa. The tree is surrounded by many mysteries which is one of the reasons for this review. It is believed by many west African countries where it is found to be highly medicinal which is true to an extent. *Okoubaka aubrevillei* is recently identified by some authors as ‘*Anunuebe*’,<sup>2,3</sup> an equally gigantic tree found in the southeast of Nigeria. Fruits produced by this tree are exceptionally large with equally large seeds. Also, the fruits and the barks are reported by Wagner *et al.* and Abbiw<sup>4</sup> to be highly sought after for medical and magical purposes.

Borokini<sup>5</sup> clarified the placement of *Okoubaka aubrevillei* as a member of *Santalaceae* family. Although, the error was still in circulation as it was still linked to *Octoknemaceae* and closely compared with *Olacaceae*. Nicrent (unpublished data) presented the tree as having a persistent flora/bract, straight placenta column, fruit diameter > 3 cm, smooth endocarp surface, globous fruit inducement, ellipsoidal pyrene shape, exocarp thickness between 15-20 mm and mesocarp thickness between 3-4 mm.

\*Corresponding author. E mail: [oke.david@bowen.edu.ng](mailto:oke.david@bowen.edu.ng)

Tel: +234 8063165709

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With all the stories around *Okoubaka aubrevillei* and its importance among the concerned peoples, it is very important to have a summarized documentation on the so called ‘strange and mysterious’ tree. Unfortunately, there is no documented material (to the best of the authors’ knowledge) to that effect. This is the justification for this research. Therefore, this research is aimed at reviewing the occurrence, myths, ethnomedicinal effects, and other known activities around this great west African tree. This is a narrative review and does not follow any particular methodology.<sup>6</sup>



**Figure 1:** Images of *Okoubaka aubrevillei*

## Materials and Methods

The search was based on various kinds of literature from PubMed online database, Scencedirect.com and Goggle scholar. It covers from 1987 to 2024.<sup>7</sup>

## Results and Discussion

### Occurrence

*Okoubaka aubrevillei* is a large and rare tree species from the tropical West and Central African rainforest which has spread wide across other African countries.<sup>8-10</sup> These countries include, Ivory Coast (where it is known as dead tree), Zaire, Senegal, Nigeria (where it is called 'igi nla') and Ghana. In Nigeria, the tree has been sighted in Benin forest, Iwo and along Ibadan Ife Road. The tree is also found in the Central African rainforests from Cameroon to the Congo Basin and the evergreen upper Guinean forest, which stretches from southeastern Ghana to Sierra Leone according to Van Andel *et al.*<sup>11</sup> It should be consciously conserved as it has been described as one of 38 threatened and near threatened plant species in the Ankasa Resource Reserve, Ghana.<sup>12</sup>

### Myths

There are several myths surrounding *Okoubaka aubrevillei*, it is locally believed among the southwest Nigerian as well as the Anyin locals in Ivory Coast that it kills other trees or vegetables around it.<sup>13</sup> Parts of the plant are said to be used symbolically (among the Yorubas) to ward off evil spirits. The tree is very rare in the forest and is believed (by the locals in the southwest of Nigeria) to be monoecious. The Yorubas also believe that the trees were not planted by anyone but just grew up as a means of God rewarding human prayers and that it also cures all kinds of ailment.

Another major myth of *O. aubrevillei* in Africa is about being metaphysical. It is a fetish tree<sup>14</sup> and is believed by the Yorubas to have purifying and cleansing properties. Burning the leaves or bark produces smoke that is used in ceremonies and rituals by the Anyin people to spiritually cleanse spaces and people. Some also use it to cleanse homes of negative energy or spirits. According to several locales in West Africa, *O. aubrevillei* is regarded as a sacred tree and is used for magical purposes.<sup>15</sup>

### Ethnomedicine of *Okoubaka aubrevillei*

Dr. Kunst, a homeopath, was the first to prepare a homeopathic dilution of the precious powder from *Okoubaka aubrevillei* which was used effectively on various types of food poisoning. The homeopathic drug proving of *Okoubaka aubrevillei* C12 has been tried by Teut *et al.*<sup>16</sup> and was found not to be of a significant difference with Placebo. It was also a homeopathic medicine used for the side effects of chemotherapy.

Plant organs such as the leaves, stem barks, roots, seeds, flowers, rhizomes are used in the treatment of several illnesses due to the presence of phytochemicals in these organs. In some plants, phytochemicals which confers ethnomedicinal properties on the plants are more abundant in one part more than the other (i.e., phytochemicals sink). This makes the plant organ useful for treatment. Table 1 shows a summarised ethnomedicinal uses of *O. aubrevillei*, the plant part or organ used in the studies, mode of usage and the countries where it is used.

The plant organs (the stem bark, seed and leaves) of *O. aubrevillei* were reported to have medicinal uses. The stem and bark of *O. aubrevillei* has the widest and most common ethnomedicinal uses both *in vitro* and *in vivo*. Very few reported the use of its leaves, and when used, was in

combination with the stem or bark in the treatment of orchitis.<sup>17</sup> The seeds are commonly ingested as aphrodisiac, in ante-natal care and treatment of boils.<sup>15</sup> The vast ethnomedicinal usage of the stem barks of *O. aubrevillei* therefore calls for thorough studies on its phytochemistry for possibly drug design. In West African, the plant parts are used for the treatment of re-occurring illness such as malaria<sup>18</sup> due to its availability and spiritual purposes<sup>19</sup> based on preformed traditional beliefs.

Although, *O. aubrevillei* is indigenous to West Africa, it is commonly used in European countries majorly as a key ingredient in homeopathic drugs, antidote for food poisoning, treatments of gastrointestinal disorder in dogs and in humans.<sup>16,20</sup> This could be because of pre- and post-colonial relationships between the two continents. It was also listed as one of the raw materials for homeopathic and anthroposophic medicinal products by Buchholzer *et al.*<sup>21</sup> Its use for fertility and pregnancy care in southwestern Ghana was reported by Asigbaase *et al.*<sup>22</sup>

### Wood and Fuel

*Okoubaka aubrevillei* yields quality wood which is used in forestry.<sup>5</sup> A variety of social, environmental, and economic advantages are offered by forestry, which entails the management and cultivation of forests.<sup>23</sup> In addition to providing habitat for wildlife and boosting biodiversity, properly managed forests also play a key role in preventing soil erosion, preserving soil fertility, and averting landslides.<sup>24-26</sup> This is because these ecosystems support a wide variety of plant and animal species. Trees reduce greenhouse gas concentrations by absorbing carbon dioxide (CO<sub>2</sub>) from the atmosphere and storing it in their biomass, which helps to ameliorate climate change.<sup>27</sup> The forestry industry also plays important roles in other areas, such as the creation of jobs in a range of tasks like tree planting, logging, processing, and forest management. Through pursuits like hiking, camping, and animal viewing, forests draw tourists and outdoor enthusiasts, producing income for nearby communities.<sup>28</sup> Thus, *O. aubrevillei* plays a key role in forestry. This is in addition to the recent investigation of *Okoubaka aubrevillei* as one of the woods experimented as potential biofuel with sufficient heating values and desirable chemical compositions to serve as biofuel sources.<sup>29</sup> It is also described as one of the species that are most vulnerable to logging fire.<sup>30</sup>

### Other Uses of *O. aubrevillei*

According to Cobbinah *et al.*<sup>31</sup> the Asante people of Ghana use the seeds of *O. aubrevillei* for the control of insects due to its insecticidal properties, and in Liberia, the stem bark is used as fish poison.<sup>32</sup> Thus, the seeds can be used in the control of common forest pests like termites and bark beetles which destroy trees thereby protecting other trees and protecting them against insect damage. The woods are sometimes used for construction or as firewood, though this should be discouraged because *O. aubrevillei* is a rare tree that is endemic to West Africa.<sup>33</sup>

*O. aubrevillei* is utilized in some parts of Ghana for spiritual protection and to alleviate spiritual issues like numerous stillbirths, bad luck, terrible dreams, and failed marriages.<sup>34</sup> Additionally, it is reportedly employed metaphorically in Côte d'Ivoire and among the Bini people to fend off evil spirits.<sup>35</sup> According to Hardie,<sup>35</sup> the tree is used to make charms to curse foes among the Bini people. People of West Africa would lay a piece of the bark inside a home to ward off ghosts and robbers and provide safety against car accidents.<sup>36</sup>

**Table 1:** Ethnomedicinal uses of *Okoubaka aubrevillei*

S/N	Ethno-medicinal uses	Part used	Mode of usage	Country	References
1	Antimalarial	stem bark	<i>O. aubrevillei</i> stem bark mixed with other plants	Nigeria	12,13
2	Treatment of convulsions	stem bark	+	Ghana	14
3	For rituals	stem bark	+	Ghana	14
4	Homeopathy drug	stem bark	+	Germany	11,15
5	Food poisoning antidote	stem bark	<i>O. aubrevillei</i> stem bark in water-alcohol solution for 3 weeks and filtered	France, Nigeria, Liberia	12, 16
6	Abscess	stem bark	+	Nigeria	12
7	Anti-witchcraft	stem bark	+	Nigeria	12
8	Elephantiasis	stem bark	+	Nigeria	12
9	Aphrodisiac	seed	+	Ghana	10
10	Cure insanity	stem bark	+	Nigeria	17
11	Orchitis treatment	stem bark and leaves	+	Nigeria	
12	Ante-natal care (to prevent miscarriage) and post-natal care	seed	+	Ghana	14
13	Healing of broken limb	stem bark	branch tied along with other plants on the broken limb	Ghana	14
14	Skin problems (caused by syphilis and leprosy)	stem bark	Infusion or maceration	Liberia	16
15	Treatment of tachycardia	stem bark	maceration	West Africa	
16	Treatment of oedema	stem bark	nose drop or vapour bath	West Africa	
17	Treatment of boils	seed	+	Ghana	18
18	Cleaning of wounds	stem bark	+	Burkina Faso	19
19					
20	Treatments of gastrointestinal disorders in dogs	stem bark	+	United Kingdom, Germany	20
21	Rheumatism treatment	stem bark	+	Nigeria	21

+ Mode of usage not specified.

**Conclusion**

*Okoubaka aubrevillei* is a popular, very important and a rare tree with lots of myths around it. In this review, some of the myths were investigated, while a few could be established other could not. Also, there are several uses of the tree which were documented by many researchers and were reported in this article. While many of the medicinal assertions are correct, it is not true that it cures all ailments. This is the first review to the best of the authors knowledge on the subject matter which will go a long way in contributing to the literature on *Okoubaka aubrevillei*. It is the authors believe that this review will guide future research on this very important tree, as there are many areas of research that are yet to be explored since many of the assumptions on its medicinal claims are yet to be confirmed by any scientific research.

**Conflict of Interest**

The authors declare no conflict of interest.

**Authors' Declaration**

The authors hereby declare that the work presented in this article are original and that any liability for claims relating to the content of this article will be borne by them.

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