



Study of Ethno-Botanical Flora of Dakingari, Kebbi State Nigeria, West Tropical Africa



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Abstract

The present research is an attempt to study the ethnobotanical flora of Dakingari, Kebbi State, Nigeria. The study was conducted from July 2014 to June 2015 villages of Dakingari. The use of questionnaire method was used for obtaining information on the indigenous knowledge of plants that are used traditionally. The results were spreads in about 31 families, 45 genera and 53 species of *angiospermic* families. They are *Amaranthaceae* 2 species, *Anacardiaceae* 3species, *Annonaceae* 1 species, *Asclepiadaceae* 2 species, *Asteraceae* (*Compositae*) 2 species, *Balanitaceae* 1 species, *Bombacaceae* 1 species, *Caesalpinaceae* 7 species, *Caricaceae* 1 species, *Capparaceae* 1 species, *Combretaceae* 4 species, *Convolvulaceae* 1 species, *Cucurbitaceae* 1 species, *Ebenaceae* 1 species, *Euphorbiaceae* 4 species, *Liliaceae* 1 species, *Malvaceae* 2 species, *Meliaceae* 1 species, *Mimosaceae* 2 species, *Musaceae* 1 species, *Moringaceae* 1 species, *Mrytaceae* 2 species, *Nymphaeaceae* 1 species, *Olacaceae* 1 species, *Pediliaceae* 2 species, *Poaceae* 2 species, *Rubiaceae* 2 species, *Sapindaceae* 1 species, *Sapotaceae* 1 species, *Sterculiaceae* 1 species and *Verbenaceae* 1 species.

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1. Introduction

Though the term “ethnobotany; was not coined until 1895 by the US botanist John William harsh Berger, the history of the field begins long before that Pythagoreans, which originated in 500 BC included refusal to the beans, perhaps because of the human relationship of beans through matter (Baruah and Kalita, 2007). Theophrastus the father of botany wrote of plant and people usage of them in his works. In A.D. 77, the Greek surgeon Pedanius Dioscorides published *De Material Medical*, which was a catalog of about plant in the Mediterranean). It also included information on how the plants were used, especially for medicinal purpose. This illustrated herbal

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publication contained information on how and when each plant was gathered, whether or not it was poisonous, its actual use, and whether or not it was edible (it even provided recipes). Dioscorides stressed the economic potential of plants. (Sarmah, 2000).

The uses of natural herbal drugs whether traditional or modern, have originated directly or indirectly from folklore, and rituals are known as ethno medico-botany. The use of herbal medicine reflects the long history of human interaction with the environment (Sarmah, 2010).

During the medieval period, ethnobotanical studies were commonly found connected with monasticism. Notable at this time was Hildegard von Bingen. However, most ethnobotanical knowledge was kept in the garden such as physic garden attached to the hospital and religious building. It was thought of in practice, use term for culinary and medical purpose and the ethnographic element was not studied as a modern anthropologist might approach ethnobotany today.

Beginning of the 20th century, the field of ethnobotany experienced a shift from the raw compilation of data to a greater methodological and conceptual reorientation. This is also the beginning of academic ethnobotany. The so-called father of this discipline is Richard Evans Schultze's even though he did not actually coin the term 'Ethnobotany'. Today the field of ethnobotany requires a variety of skills; botanical training for the identification and preservation of plant specimen; anthropological training to understand the cultural concept around the perception of plants; linguistic training, at least enough to transcribe local terms and understand native morphology, syntax, and semantics.

The publication of 'Flora of West Africa' by (Hutchinson and Dalziel, 1963) was followed by two national floras by (Stanfield, 1970) for Grasses of Nigeria (Lowe and Stanfield 1974) for Flora of Nigeria (Sedges). Later on some aspect of studies in flora diversity of Kebbi state, Nigeria by (Singh *et al.*, 2010), towards making a flora of Kebbi state, Nigeria by (Singh and Misra, 2013 a, b). Morpho-taxonomic and Ethnomedicinal flora of Kebbi state, Nigeria by (Singh and Abubakar 2011a,b,c, Singh 2015).

2. Materials and Methods

2.1 Study Area

The study area Dakingari is located at approximately at latitudes 11° 38' 51' North and 4° 3' 51' East It is bounded the North by Bunza local government area, East by Kalgo local government area and Maiyama local government area, Southeast by Bagudo local government area, West by Dandi local government area. It is the fourth largest local government located in the central part of Kebbi state.

2.2 Climatic Condition

The climate conditions of Dakingari enjoy the tropical type of climatic condition generally characterized by two different seasons that are the wet and dry season. The rainfall began by the month of April with the heaviest rainfall in the month of July-to August with annual rainfalls between 500 mm to 1300 mm. The dry season is characterized with few or absence of vegetation cover and non-occurrence of rainfall. It is a period of low agricultural activities mainly restricted to Fadama. This season is also made up of two period which are cold harmattan, recorded in the month of November to January and hot harmattan recorded between the month of February.



Figure 1. Map of Dakingari area

2.3 Plants collection

The study was conducted from July 2014 to June 2015 in the villages of Dakingari. The use of questionnaire method was used for obtaining information on the indigenous knowledge of plants that are used traditionally. The plant's specimens collected from different localities and habitats in every stage of their growth and reproduction. A complete specimen possesses all parts of plants including the root system. The plant's specimen should be usually in the flowering stage. The specimen collected must be tagged immediately and records about localities must also be noted (Jain and Rao 1978, Okoli 2002, Tucker and Calabrese 2005).

2.4 Pressing and drying of plants

The plants pressed in between the sheet of blotting papers or old newspapers. One plant is arranged on one sheet in a manner that there should be no overlapping of plants (Jain and Rao, 1978). The blotting papers with plant specimen were placed in field press for about 24 to 48 hours. The press is then opened, blotting should be changed and rearrange the plants properly. After it, press should be again closed and again after 2 or 3 days change the blotting and dry plants in sunlight or artificial heat (Jain and Rao, 1978).

2.5 Mounting and labeling of the specimens

After drying, the specimen mounted for permanent record on a sheet called mounting papers on herbarium sheets. The specimen is mounted to the sheet with the help of *fevicol* or quick drying liquid paste after mounting the

specimens on the herbarium sheet labeled. A label is pasted or printed on lower right-hand corner, compressed in plant press to prevent them from drying and this press herbarium was house in the herbarium of Department of Biological Sciences, Kebbi State University of Science and Technology Aliero, Nigeria for record and references

Justification of Research

Ethnobotany is the study of how people of a particular culture and region make use of indigenous plants. In the study, ethnobotanists gather data from the people with the view of understanding the ways by which they use plants for medicine, food, construction materials and as tools. Before the advent of western medicine, indigenous people worldwide have been taking care of their health needs using plants. The African continent has a long history of the use of plants, in some African countries up to 80% of the rural population rely on medicinal plants as a source of remedies.

Enumeration of Taxa

The present investigation enumerates the taxa during the study of ethnobotanical flora of Dakingari, Kebbi State, Nigeria. The study was conducted from July 2014 to June 2015 villages of Dakingari. After a thorough study on 250 field numbers, the identified taxa have been found to be spread about 53 species and 45 genera of 31 families, these have been arranged in an alphabetical order, and the same pattern has been followed in arranging lower order taxa under each family. Each taxon has been discussed their ethnobotanical uses.

1) Amaranthaceae

(1) Botanical name: *Amaranthus viridis* L.

Local name: Alayyahu

Ethnobotanical uses: The leaves are edible and also squeezed to extract its water content that is used in curing eye disease by dropping a few drops water twice a day.

Dakingari, D.Singh: 36.

(2) Botanical name: *Amaranthus spine* L.

Local name: Rukkubu

Ethno-medicinal uses: The plant is edible the leave and tender stems are eating, cooking.

Dakingari, D.Singh: 28.

2) Anacardiaceae

(3) Botanical name: *Anacardium occidentale* L.

Local name: Kashu

Ethnobotanical uses: The fruit is edible and chewed to treat vomiting, nausea, and relief for liver diseases. The bark is dried and ground to powder, add to pap and drunk for a cough, jaundice, and dysentery. Leaves are boiled and take for measles.

Dakingari, D.Singh: 39.

(4) Botanical name: *Mangifera indica* L.

Local name: Mangwaro

Ethnobotanical uses: Fruit is edible. Leaves are prepared through decoction for remedy of diarrhea, fever, chest pain, and connection of mango leaf with another plant such as guava, orange, is taken after childbirth for body strength.

Dakingari, D.Singh: 01.

(5) Botanical name: *Sclerocarya birrea* (A. rich) hochst.

Local name: Lodaloda

Ethnobotanical uses: Ripe fruit is edible, leaves are used for a treat sore throat. Bark combined with that of *Parkia biglobosa* for the treatment of syphilis and measles.

Runtowa, D.Singh: 53.

3) Annonaceae

(6) Botanical name: *Annona senegalensis* L.

Local name: Gwanda Daji

Ethno-botanical uses: The ripe fruit is edible and the whole part of the plant is used as pain reliever and also to treat the gastro-Intestinal disorder.

Uroba, D.Singh: 31

4) **Asclepiadaceae**

(7) Botanical name: *Calotropis procera* (L) R.Br.

Local name: Tunfafiya

Ethnobotanical uses: The plant is medicinal the bark is grinded in to powder and use in curing some common diseases such as inflammatory disease, fever, rheumatism, tuberculosis, the latex contents also rub in the body for skin diseases such as eczema.

Dakingari, D. Singh: 24

(8) Botanical name: *Sarcostema viminalis* Smith.

Local name: Bakinmutum

Ethnobotanical uses: The root is boiled and drunk for the treatment of dysentery, stomach pain.

Uroba, D.Singh: 27

5) **Asteraceae**

(9) Botanical name: *Vernonia amygdalina* L.

Local name: Shuwaka

Ethnobotanical uses: The leaves are used to the prepared soup. It also impounded squeezed add with milk and drunk for heart disease and increase milk production in women.

Dakingari and Lambu, D.Singh: 10

6) **Balanitaceae**

(10) Botanical name: *Balanite aegyptica* Delite.

Local name: Adua

Ethnobotanical uses: Leaves are dried and grind to powder, add to pap or honey to treat stomach-ache, yellow fever. Bark also soaked in water to treat dysentery.

Gandu, D.Singh: 5

7) **Bombacaceae**

(11) Botanical name: *Adansonia digitata* L.

Local name: Kuka

Ethno-botanical use: Dried leaves are grind into powder and prepare a soup, fruit are edible bark are boiled and taken as a treatment of malaria, asthma, diarrhea, bladder diseases at least once a day not too much.

Dakingari, D.Singh: 48.

8) **Caesalpinaceae**

(12) Botanical name: *Cassia mimosoides* L.

Local name: Baguruwar kasa

Ethno-botanical use: Its use to dysentery, headache, fever through squash method, when is grinded in to powder it treat rashes after childbirth.

Dakingari, D.Singh: 35

(13) Botanical name: *Cassia tora* L.

Local name: Tafasa

Ethnobotanical uses: The cooked leaves are edible. It is also very useful in treating skin disease like ringworm, itching or body scratch, fresh leave is used externally to treat eczema and dermatomycosis, through squash method.

Fruits are decocted and drink for treating fever.

Dakingari, D. Singh: 37

(14) Botanical name: *Temarindus indica* L.

Local name: Tsamiya

Ethnobotanical uses: The ripe fruit is said to treat fever, intestinal discomfort ailment in case of poisoning, infection swelling. The fruit also reduces blood sugar.

Uroba: D.Singh 21

(15) Botanical name: *Cassia kotschyana* Oliv.

Local name: Malga

Ethno-botanical uses: Root, with a combination of *Guiera senegalensis* are boiled and used for steam-bath for the treatment of general body pain.

Dakingari guba, D.Singh: 40

(16) Botanical name: *Piliostigma reticulate* Sch.

Local name: Kalgo

Ethno-botanical uses: Root with a combination of *Guiera senegalensis* and *Waltheria indicca* and marked, is used to treat serious diarrhea both adult and children.

Dakingari and Road site, D.Singh: 44

(17) Botanical name: *Cassia occidentalis* L.

Local name: Sanga Sanga

Ethno-botanical uses Decoction of the fresh leaf with a combination of other plants such as orange, dogonyaro. Is said to treat malaria fever, typhoid fever, Rheumatism and rip pain both adult and child.

Dakingari, D.Singh: 14

(18) Botanical name: *Senna alata* L. Roxb.

Local name: Filaskon bature

Ethno-botanical uses: Leaves are boiled and drunk is said to treat malaria fever, typhoid fever, and dysentery.

Dakingari, D. Singh: 17

9) Caricaceae

(19) Botanical name: *Carica papaya* L.

Local name: Gwanda

Ethno-botanical uses: The fruit is edible, leaves, seeds, are used to treat gonorrhoea, Syphilis, Amoebic dysentery, through decoction method the fruit are also use in treating ringworm, malaria through grinding in to powder the fruit is also edible.

Dakingari, D.Singh; 45

10) Capparaceae

(20) Botanical name: *Cleome viscosa* L.

Local name: 'Yar Unguwa

Ethno-botanical uses: The plant is edible fresh is squeezed and place into the anus for treatment of dysentery.

Dakingari, D.Singh: 32

11) Combretaceae

(21) Botanical name: *Guiera senegalensis* (L) Briq

Local name: Sabara

Ethno-botanical uses: The plant is medicinal and is used in the treatment of allergic reaction such as thrush; fresh leave is grinded into powder to rub all over the body. It is also used by a woman after given birth to promote their body' strength by taking a bath

Wasadabiri, D.Singh: 3

(22) Botanical name: *Terminalia avicennioide* Gull.et Perrott.

Local name: Baushe

Ethno-botanical use: Bark is boiled and taken orally to treat a cough, syphilis, rheumatism and joint pain.

Polytechnic campus, D.Singh: 22

(23) Botanical name: *Combretum fragans* F. Hoffm.

Local name: Jar tarauniya

Ethno-botanical uses The leaves boiled extensively and drunk to cease blood bleeding, for syphilis, body pain, and itchiness. Leaves and root for asthma, chest pain.

Uroba, D.Singh: 26.

(24) Botanical name: *Combretum lecardii* Engl and Diels.

Local name: Farartarauniya

Ethno-botanical uses: The leaves boiled extensively and drunk to stop bleeding, and also use treat syphilis, body pain, and itchiness. Leaves and root for asthma, chest pain, and constipation.

Uroba, D.Singh: 25

12) Convolvulaceae

(25) Botanical name: *Ipomoea repens* L.

Local name: Dumal Kada

Ethno-botanical use: The whole plant both root, stem, flower are boiled then a patient of dysentery enter the water and sit-down at least 30m. it is also used for the treatment of syphilis.

Dakingari and Rundown, D.Singh:42

13) Cucurbitaceae

(26) Botanical name: *Citrillus vulgaris* Thumb.

Local name: Kan kana

Ethno-botanical use: The fruit is edible. The rind of the fruit is used to treat an ulcer with a combination of milk it also said to treat diabetic, hypotension.

Dakingari, D.Singh: 33

14) Ebenaceae

(27) Botanical name: *Diospyrosmes piliformis* Hochst. ex. A.DC.

Local name: Kanya/Kaiwa

Ethno-botanical uses: The fruits are edible. The fresh fruits are grinded and filtered and a cup of the filtered extract is taken twice a day for remedy of fever, diarrhea.

Dakingari, D.Singh: 13

15) Euphorbiaceae

(28) Botanical name: *Euphorbia hirta* L.

Local name: Nonon Kurchiya

Ethno-botanical uses: The fresh leave, stem, and seed are chewing in case of Asthma, bronchitis, worm infection (female) and dysentery. It is taken frequently.

Dakingari, D.Singh: 16

(29) Botanical name: *Flueggea virosa* Roxb.

Local name: Tsa

Ethno-botanical uses: The whole parts of the plants, fruit are boiled and water is added to pap and drunk for diarrhea. The bark is chewed for stomach-ache.

Dakingari and Uroba, D.Singh: 20

(30) Botanical name: *Phyllanthus pentandrous* Sch and then.

Local name: Geron tsuntsaye

Ethno-botanical uses: The whole plant is chewed for throat sore and ear problem and also used for the stomach-ache.

Dakingari, D.Singh: 51

(31) Botanical name: *Ricinus communis* L.

Local name: Dankwasaro

Ethno-botanical uses: Fruits are pounded dissolved in water sieved and drunk to prevent being pregnancy from women.

Tungar lanta, D.Singh:52

16) Liliaceae

(32) Botanical name: *Alluum cepa* L.

Local name: Albasa

Ethno-botanical uses: The bulb, leave extract are used to treat inflammation, dental problem, throat infection by squeezing and rubbing on the affected area and the bulb is edible and used for food.

Lambu, D.Singh: 49

17) Malvaceae

(33) Botanical name: *Hibiscus sabdariffa* L.

Local name: Zoborodosobo

Ethno-botanical uses: The back of the fruit is used as Roselle tea and is said to treat high blood pressure, cold, tooth ache, urinary tract infection, conjunctivitis it also increase the volume of blood and it edible cooking soup.

Dakingari, D.Singh 18

(34) Botanical name: *Abelmoschus esculentu* L.

Local name: Kubewa

Ethno-botanical uses: The fruit is edible cooking making soup and it increases blood that is blood builder.

Dankingari, D.Singh: 47

18) Meliaceae

(35) Botanical name: *Azadirachta indica* A. Juss.

Local name: Dogonyaro

Ethno-botanical use: The fresh leave is highly ingredient with antiseptic anti-inflammatory gingivitis i.e gum infection malaria, typhoid fever through squash method it is taken very small not much because it has a bitter taste.

Dakingari, D.Singh:43

19) Mimosaceae

(36) Botanical name: *Acacia nilotica* L willd exde.

Local name: Bagaruwa

Ethno-botanical uses: The fresh leave is a squeeze and taken as a remedy of stomach pain, ripe dried fruit is grinded in to powder with a combination of milk are taken orally for the treatment of ulcer, at least twice a day not much.

Dakingari, D.Singh: 7

(37) Botanical name: *Acacia erythrocalyx* (L) Wild.

Local name: Gumbi

Ethno-botanical uses: The roosts are grinded to powder for wounds. The bark is chewed for tooth decay. Leaves are boiled for a headache and cough.

Dakingari, D.Singh: 12

20) Musaceae

(38) Botanical name: *Musa sapientum* L.

Local name: Ayaba

Ethno-botanical uses: The ripe fruit is edible as plantain. The leaves are boiled with a combination of the plant such as *Cassia occidentals* and *Psidium guajaba* is taken as a remedy of malaria, typhoid fever, diarrhea, and mental disorder.

Dakingari and Lambu, D.Singh: 46

21) Moringaceae

(39) Botanical name: *Moringa oleifera* L.

Local name: Zogale

Ethno-botanical uses: The fresh plants are boiled and taken the water for the treatment of paralysis, eye diseases, asthma, the leave are cooked and edible the water is also taken most especially by the diabetic patient.

Dakingari and Lambu, D.Singh: 2

22) Myrtaceae

(40) Botanical name: *Psidium guayava* L.

Local name: Gwaiba

Ethno-botanical uses: The ripe fruit is edible. Leaves are boiled and drunk to treat malaria, typhoid fever, with a combination of *Cassia occidentalis*, orange, mango. Steam-bath also performed morning and evening twice a day and regularly taken, drinking of water.

Dakingari and Lambu, D.Singh: 9

(41) Botanical name: *Eucalyptus camaldulensis* Schlecht.

Local name: Bishyar turare

Ethno-botanical uses: The fresh leaves are combined with mango, guava, orange and boiled for steam-bath in the treatment of typhoid, malaria, dysentery, cold, and cough served as body pain relievers.

Dakingari, Barbarejo and Road site, D.Singh: 15

23) Nymphaeaceae

(42) Botanical name: *Nymphaea lotus* Willd.

Local name: Bado

Ethno-botanical uses: Ripe fruits are edible. Root is also boiled and drunk as bladder problem when a person is not passing urine it will help to ease urination.

Tungar lanta and River, D.Singh: 04

24) Olacaceae

(43) Botanical name: *Xinema americana* L.

Local name: Tsadan daji

Ethno-botanical uses: Ripe fruits are edible. Leaves are boiled with combinations of *Boswellia dalzielii* (hano), and *Pseudoedrela kotschyi* (tuna) added potassium and drunk for inflammatory diseases, dysentery.

Uroba, D.Singh: 41

25) Pedaliaceae

(44) Botanical name: *Ceratotheca sesamoides* Endl.

Local name: Yodokarkashi

Ethno-botanical uses: The fresh leaves are squash and rub on the skin as a treatment of skin infection, leaves are used by women to treat lice problems through washing their hair with the impounded fresh leaves.

Dakingari and Gandu, D.Singh: 19.

(45) Botanical name: *Sesamum indicum* L.

Local name: Ridi

Ethno-botanical uses: The fruit is edible and used to produce oil. Leaves are squash and rub on the skin as a treatment of skin infection.

Dakingari and Gandu, D.Singh: 50

26) Poaceae

(46) Botanical name: *Triticum aestivum* Lam.

Local name: Alkama

Ethno-botanical uses: It is edible used make food. Pap added with honeybee is said to maintain the quality of breast in women. It is also served as the food of diabetics patients.

Dakingari and Lambu, D.Singh: 34.

(47) Botanical name: *Eragrostis tremella* Hotch Ex.

Local name: Burburwa

Ethno-botanical uses: The root is chewed for treatment of throat pain

Dakingari and Gandu, D.Singh: 29

27) Rubiaceae

(48) Botanical name: *Sarcocephalus latifolius* Smith.

Local name: Tafashiya/tuwonbiri

Ethno-botanical uses: The ripe fruit is edible. Leaves are boiled and drunk for the treatment of inflammation, dysentery. Leaves powdered are also added to pap for the treatment of many diseases.

Dakingari and Uroba, D.Singh: 30

(49) Botanical name: *Mitracapus hirtus*. L. DC.

Local name: Harwatsi

Ethno-botanical use: The fresh plants are used in the treatment of eczema through which plant is squeezed and rub in the affected area.

Dakingari and gandu, D.Singh: 6

28) Sapindaceae

(50) Botanical name: *Paullinia pinnata* L.

Local name: Farce biyar

Ethno-botanical uses: Whole plants are boiled and drunk for the fasts walking and aid teeth germination in infant children.

Dakingari and Uroba, D.Singh: 38

29) Sapotaceae

(51) Botanical name: *Vitellaria paradoxa* C.F.Gaertn.

Local name: Kade

Ethno-botanical uses: The fruit is edible and uses to produces oil (man kade) fresh leaves are boiled and taken as treatment of stomach ache, rheumatic ache, diarrhea, nausea, fruit ointment are used on skin infection, and apply on the head of hair growth.

Dakingari and Uroba, D.Singh: 23

30) Sterculiaceae

(52) Botanical name: *Waltheria indica* L.

Local name: Damaigi

Ethno-botanical uses: The leaves are boiled and taken as a treatment of abdominal pain, diarrhea most especially for children.

Dakingari, D.Singh: 11

31) Verbanaceae

(53) Botanical name: *Vitex doniana* Shumach and Thorn.

Local name: Dunya

Ethno-botanical uses: The fruit is edible, root is boiled and take as a remedy of cholera, anemia, leprosy, mouth infection.

Dakingari, D.Singh: 8

3. Results and Discussions

In this study, fifty (53) indigenous species of plants belonging to (31 families) were documented as being useful for human life. As trees have the highest number of (23 species) compared to both shrubs (12 species) and herbs (18 species) respectively. It was noticed that most of the plants have multipurpose medicinal uses and parts of each plant species being used. While some plants are edible, others are of economic importance. The plants are prepared in various ways for medicinal purposes such as concoction, decoction, grinding, impounding etc. of leaves, stem, flower fruit, bark, and seeds. These various formulations are either, drunk sniff, smoke, bath, steaming, enema, rubbed etc. on the body for diseases management. Other plants are used as sources of food. Varieties of plants are prepared commercially as a source of income in various communities. *Sesamum indica* and *Vitellaria paradoxa* plant seeds are used as sources of oil.

4. Conclusion

From this research work, we conclude that all human being and animals almost depend on a plant directly or indirectly on the plant as a source of energy, food, shelter, economic, medicine, fuel, firewood and as raw materials for industries purpose. Almost all the synthetic drugs and traditional drugs are sources from plants. The ethnobotany is of great importance as it provides an easier and cheaper way for the management of malnourishment ailment within the society.

Conflict of interest statement and funding sources

The author(s) declared that (s)he/they have no competing interest. The study was financed by the author.

Statement of authorship

The author(s) have a responsibility for the conception and design of the study. The author(s) have approved the final article.

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