

# Therapeutic Potential Of Fish By Products In Aguobiri Community, Niger Delta

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**Abstract:** *The study was conducted in Aguobiri community at the heart of Niger Delta to ascertain the value of fish by products in traditional medicine. Data was collected through interview from individuals using fish byproducts for curing common ailment in the area. Individuals were selected based on those having experience of 30 years and above. The age range was from 55yrs above. Group discussions was also conducted with inhabitants of the community. Results showed that 8 species of fish byproducts were mostly used to treat common health challenges such as infertility, convulsion/epilepsy eczema and as anti-poison. It is therefore pertinent to encourage fish byproducts therapy since it has negative effect on the fishery resources, cures common sicknesses, and serves as source of income in the rural areas.*

**Keywords:** *cure, by product, fish, resources, treatment*

## I. INTRODUCTION

Fish as a rich source of protein is consumed either in fresh or dried form (Nelson, 2006) and the non-edible parts are discarded as waste. These waste materials become an important source of fish byproducts which are used as a source of healing in different kinds of human ailments. Traditionally, fish byproducts such as (bones, tails, heart, scales, and blood) form important ingredients in the preparation of curative, protective, and preventive medicines (Adeola, 1992) due to their bioactive compounds.

Bioactive peptides, collagen and gelatin, oligosaccharides, fatty acids, enzymes, calcium, water soluble minerals and biopolymers (Bioactive compounds) have been identified in fish byproducts. These compounds have shown potential agents for many applications as antioxidants, antibacterial, antiviral, antihypertensive and anticancer (Senevirathne, *et al.*, 2012). Marine originated collagen have been recognised for its biological safety, excellent biocompatibility, low antigenicity, high biodegradability and cell growth potential (Kaewdang, *et al.*, 2014, Shoulders, *et al.*, 2009).

As reported by Costa-Neto and Marques (2000) chemicals from animals are therapeutic arsenals that have been playing significant role in healing processes, magic rituals, and religious practices of people from five continents. Several marine and estuarine animal resources are been used as folk medicines by artisanal fishers from Sibiri binha beach in the state of Bahia, north eastern Brazil (Costa-Neto and Marques 2000). A total of sixty-six raw materials including scales, spur shells, fats, skin, globe of the tentacles, and otoliths are used in the elaboration of remedies to treat locally diagnosed ailments administered to the patients in the form of plaster, teas, smokes, and food. Asthma, bronchitis, stroke, and wounds are the most usual illnesses treated by these animal based medicines. The sponge (*Lutteriella variabilis*) produces relatively large amount of a particular chemical with anti-inflammatory activity known as mono-elide which inhibits the action of enzymes called phospholapase A<sub>2</sub>. The powerful immune suppressive agent discodexmolide originates from another sponge *Discoderma sp.* (Faulkner, 1992).

The annual global trade in animal based medicinal products is estimated at billions of dollars per year (Kunin and Lawton, 1996). Of the 252 essential chemicals selected by

WHO, 11% comes from plants while 8.7% from animals (Marques 1997). Out of the 150 prescribed drugs currently used in the United States of America, 27 have animal origin (World Research Institute 2000) beneficial to human health.

Human communities are rapidly losing their cultural characteristics due to civilization and population growth. Traditional drugs and traditional medicines in general represents a poorly explored field of research in terms of therapeutic potentials or clinical evaluation. It is essential, however, that traditional drug therapies be submitted to the appropriate benefit/risk analysis for human benefits. This paper is therefore aimed at reporting the use of fish byproducts in traditional medicinal study among the inhabitants of Aguobiri community in the Niger Delta.

## II. MATERIALS AND METHOD

### THE STUDY AREA

The study was carried out in Aguobiri community in southern Ijaw local government area. Southern Ijaw is one the eight local government areas in Bayelsa state including Yenagoa, Ogbia, Nembe/Brass, Kolokumo Opokumo, Ekeremo, and Southern Ijaw local government area.

Aguobiri is located between latitude 2° 10' and 2° 50' south and between longitude 33° and 34° East. The clan headquarters is in Oporomo town and it comprises of six villages, where each community traditional medicine practitioners utilize both aquatic and terrestrial organisms as a source of medicine. The people are engaged in diverse occupations such as farming, fishing, and cultural show cases including Aguobiri Youth Organization festive (AYO), and the traditional masquerade parade. These festive are sources of internally income to the community.

### DATA COLLECTION

Data was collected from interview conducted in June 2016 in Aguobiri community. The ethnomedicinal data which includes; local names of fish byproducts, mode of preparation and administration were collected using the socio ecological approach, where informants were placed at ease. Interviews with elderly people in the local (Izon) language was conducted and group discussions held with members of the community. Selection of informants was based on 30years of experience, recognition as experts and knowledgeable people involved in traditional medicine. A total of 10 (3male and 7 female) individuals were selected as informants in ethnomedicinal information. The informants interviewed, age range was from 55yrs above. They were asked about the blending of fish products used as ingredients and therapeutic effect of a given medicine in terms of the right ingredients, the proper dose and the period of medication. Fish samples were collected randomly from the landings of artisanal fishers and identified according to Froese and Pauly (2015).

## DATA ANALYSIS

*Relative Frequency of citation index (RFC)*: Indicates the local importance of each species. The value was calculated from the relationship  $RFC = FC/N$ ; where FC is the number of informants mentioning the use of the species and N is number of informants participating in the survey (Vitalini, *et.al.*, 2012). RFC index varies from 0 to 1. When RFC is 0, means no one refers to the animal as useful and value of 1 indicates all informants refer to the animal as useful (Mootsamy and Mahomoodly, 2014).

## III. RESULTS AND DISCUSSION

During processing, fish byproducts regarded as waste are used by traditional medicine practitioners for treatment of human ailments in Aguobiri community, Niger Delta. Traditional aqua-therapy acquaintance was mainly attained through parental heritage and experiences about the effectiveness of fish byproducts in treating common health challenges in the community.

Eight fish species mostly used by the people are shown in table 1. These species belong to eight different families and includes *Clarias gariepinus*, *Hepsetus odoe*, *Proptoterus annectens*, *Malapterurus electricus*, *Gymnarchus niloticus*, *Parachanna africana*, *Heterobranchus niloticus* and *Dasyatis garouaensis*. The Relative Frequency of citation index (RFC) estimated for each species were: *Clarias gariepinus* (0.90), *Hepsetus odoe* (0.90), *Proptoterus annectens* (0.80), *Malapterurus electricus* (0.80), *Gymnarchus niloticus* (0.90), *Parachanna africana* (0.90), *Heterobranchus niloticus* (0.90) and *Dasyatis garouaensis* (0.90). All values of RFC were close to 1 indicating the usefulness of the different byproducts from the different fish species. Curative effect of the different fish by products are shown in Table 2.

FAMILY	SPECIES	COMMON NAME	LOCAL NAME
Caridae	<i>Clarias gariepinus</i>	Catfish	Emonno
Hepsetidae	<i>Hepsetus odoe</i>	African river pike	Osau
Protopteridae	<i>Protopterus ennectens</i>	African lung fish	Ebieseni
Malapteruridae	<i>Malapterurus electricus</i>	Electric fish	Omma
Gymnarchidae	<i>Gymnarchus niloticus</i>	Trunk fish	Aba
Channidae	<i>Parachanna Africana</i>	Snakehead fish	Agbobu
Claridae	<i>Heterobranchus niloticus</i>	Mud catfish	Alomo
Dasyatidae	<i>Dasytis garouaensis</i>	Sting ray fish	Sika

Table 1: Traditional Medicine Species Composition In Aguobiri Community

The blood of catfish rich in amino acids is mixed with palm kernel oil that contains vitamins and antioxidants. The combination of (5ml) blood and (10ml) palm kernel oil is used by the local people of Aguobiri for the treatment of fade

skin disease known as (eczema). The combination is applied on the area covered with eczema for three to five days for complete healing of the skin. The curative properties of catfish therapy could be due to the antioxidants properties of the palm kernel oil which is enhanced by the amino acid in the blood of the catfish. These chemicals reduce damages of the dry cells and promote building of new cells.

African river pike is a predatory freshwater fish belonging to the family Hepsetidae. It is an elongated fish with a pike-like body. The fresh egg is highly medicinal and contains amino acid. The eggs are locally sauced with plantain for women who do not have the ability to get pregnant. The high percentage of amino acid and iron from the plantain might help awaken dead cells and produces reproductive hormones.

African lungfish is a common fish species found in fresh water bodies in Aguobiri community. The heart is used in combination with plantain for safe delivery of women who have difficulties in giving birth or inability to deliver safely. The blood in the heart of the African lung fish contains a great percentage of amino acid. The plantain is also rich in iron. This combination increase the blood in the system, which could increase the strength and improve the blood level of the woman during delivery.

COMMON NAME	BYPRODUCTS	SICKNESS CURED
Catfish	Blood with palm kernel oil ( <i>Elaise guineansis</i> )	Eczema.
African river pike	Fresh eggs with plantain ( <i>Musa paradisiaca</i> )	It enable women to conceive.
African lung fish	The heart with plantain ( <i>Musa paradisiaca</i> )	Safe delivery.
Electric fish	Bone with palm kernel oil.	Epilepsy.
Trunk fish	Bone with palm kernel oil.	Epilepsy .
Snakehead fish	Intestine with fern ( <i>Dryopteris</i> )	To enable the pregnancy to show
Mud catfish	Intestine with water lily ( <i>Nympaeaceae nympheales</i> )	To keep the fetus in the right position inside the stomach.
Sting ray fish	The tail with dry gin (alcohol/eternal)	Anti-poison for bee stings, snake poison from the sting ray attack.

Table 2: Species And Curative Properties

An electric fish is any fish that can generate electric field and it is known to be electro-genic, while a fish that has the ability to detect electric field is said to be electro-receptive. The bone of electric fish contains calcium, chondroitin sulfate, and collagen which has rich therapeutic properties important to body system. Palm kernel oil is rich in vitamins and antioxidants. A combination of grinded electric fish bone and 5 to 10(ml) of palm kernel oil is used for the treatment of convulsion/epilepsy. Calcium in the bones of the electric fish can ensure and maintain normal growth and development of

bones. Chondroitin sulfate can be used as food supplement, medicine and health care products. Collagen can help keep the skin firm and elastic, holds all living tissues together and has beneficial effect on skin and bone. Combination of the bone with palm kernel oil could be the reason for this medication.

Trunk fish (*Gymnarchus niloticus*) in combination with palm kernel oil also cures epilepsy. *Gymnarchus niloticus* is a common fish species found in most fresh water bodies and estuaries. The fish *Gymnarchus niloticus* is consumed as fish protein, calcium, and minerals. It is important to human body building process and it boosts the immune system to fight against antigens. Palm kernel which contain vitamins and some essential minerals and antioxidants are mixed with the grinded *Gymnarchus niloticus* bone to cure epilepsy in human body traditionally.

*Parachanna africana* (Snakehead fish) is a common species found in fresh waters. The whole fish without removing any waste product is cooked with plantain with the fern (*Dryopteris affinis*) leaf that is rich in sodium chloride. Traditionally, *Parachanna africana* and fern leaf with plantain is cooked for the patient to eat for steady growth of pregnancy in a pregnant woman. Most women conceive and deliver safely, while some have difficulties. The parts of *Parachanna africana* considered as waste (intestine, fins, and tail) are rich in (protein, vitamin, calcium, chondroitin sulfate, and iron) that it is important to human health. Rich nutritional value of fish could be the reason the whole fish is cooked.

*Heterobranchus niloticus* (mud catfish). The intestine of this fish is used with water lily (*Nymphae lotus*) to cook with yam (*Dioscoria spp*) or plantain (*Musa spp*) for pregnant women with breeched babies. Traditionally, this byproduct from mud catfish with the native herb, *Nymphae lotus* is used in order to keep the baby in the right position in the womb.

Sting ray fish (*Dasyatis garouaenis*) are group of rays, they are cartilaginous fish related to shark. Some sting rays have one or more barbed stingers (modified from dermal tentacles) on the tail, which is used exclusively in self-defense. The stinger may reach a length of 35cm (14m), and it's under side has two groves with venom glands. The stinger is covered with a thin layer of skin, the integumentary sheath in which the venom is concentrated. A few number of members in the suborder, such as the Manta and Porcupine rays do not have stingers (Meyer, 1997). The tail of the sting ray is mixed with alcohol (dry gin) to serve as anti-poison to the sting ray attacks, snake bites, and honey bee stings. Curative property of the sting venom could be due to the presence of diverse mixture of peptides, enzymes and pharmacologically active components (Monteiro-dos-Santos and Lopes-Ferreira, 2011).

#### IV. CONCLUSION

The present study shows that the Aguobiri people have very rich folk lore and traditional knowledge in the utilization of different fish byproducts. It is important to note that human health is dependent on the biodiversity and natural functioning of a healthy ecosystems. Thus, discussing aqua-therapy within sustainance of the aquatic resources is one of the key elements in achieving the development of medicinal faunistic resources. It is therefore pertinent to conduct more studies for scientific

validation to endorse medicinal value of fish byproducts; and this knowledge should be included in policies of conservation and management of fish resources in the Niger Delta.

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