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Fascinating Nutritional, Prophylactic,Therapeutic & Socio-Economic Reconcile Attributable to Drum Stick tree (*Moringa Oleifera* Lam.)

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Abstract- Different parts of this M. oilbera (Drum Stick Tree) contain a profile of important minerals, and are a good source of vitamins, **β**-carotene, amino acids and various phenolics. The Moringa plant provides a rich and rare combination of zeatin, quercetin, **β**-sitosterol, caffeoylquinic acid and kaempferol. In addition to its compelling water purifying powers and high nutritional value. Various parts of this plant such as the leaves, roots, seed, bark, fruit, flowers and immature pods act as cardiac and circulatory stimulants, possess antitumor, antipyretic, antiepileptic, antiinflammatory, antiulcer, antispasmodic, diuretic, antihypertensive, cholesterol lowering, antioxidant, antidiabetic, hepatoprotective, antibacterial and antifungal activities, and are being employed for the treatment of different ailments in the indigenous system of medicine, particularly in South Asia.

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Fascinating Nutritional, Prophylactic,Therapeutic & Socio-Economic Reconcile Attributable to Drum Stick tree (*Moringa Oleifera* Lam.)

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Abstract- Different parts of this M. oleifera (Drum Stick Tree) contain a profile of important minerals, and are a good source of vitamins, β-carotene, amino acids and various phenolics. The Moringa plant provides a rich and rare combination of zeatin, quercetin, β-sitosterol, caffeoylquinic acid and kaempferol. In addition to its compelling water purifying powers and high nutritional value. Various parts of this plant such as the leaves, roots, seed, bark, fruit, flowers and immature pods act as cardiac and circulatory stimulants, possess antitumor, antipyretic, antiepileptic, antiinflammatory, antiulcer, antispasmodic, diuretic, antihypertensive, cholesterol lowering, antioxidant, antidiabetic, hepatoprotective, antibacterial and antifungal activities, and are being employed for the treatment of different ailments in the indigenous system of medicine, particularly in South Asia. Global industrialization and the increasing demand for environmental friendly products make moringa have great potential as a source of pharmaceuticals, dyes, biofuel, human food, animal and fish feed, and water purification products. This review focuses on the detailed phytochemical composition, therapeutic applicability, along with pharmacological assets of different parts of this multipurpose tree. Dietary consumption of its part is therein promoted as a strategy of personal health preservation and self-medication in various diseases. The enthusiasm for the health benefits of *M. oleifera* is in dire contrast with the scarcity of strong experimental and clinical evidence supporting them. Fortunately, the chasm is slowly being filled. Reported studies number and variable in design, seem rigorously concordant in their support of therapeutic potential. Phytochemical analyses have shown that its leaves are particularly rich in K, Ca, P, Fe, vitamins A and D, essential amino acids, as well as such known antioxidants such as β-carotene, vitamin C, and flavonoids. Further research considering relevance to explore the potential of M olifera's various parts has to be emphazed.

Keywords: ROS; antioxidants; Free radicals; SOD; GTH; oxidative stress; pathogenesis; CVD; diabetes; water purification; biodiesel; quercetin-3-O-β-d-glucoside; chlorogenic acid; phenolic acids.

I. Introduction

From time immerorial and historical perspective, it's evident that affluent stockroom of traditional therapeutic lashing medication is well documented and enthralling in ancient literature. *Moringa oleifera*, the Tree of Life or a Miracle Tree, but rather than this being in reference to its potential medicinal usage this is actually refering to how It's a very valuable food crop (It's drought resistant, grows very fast, and is highly nutritive) and even beyond food it serves many benefits in third world countries such as having an ability to be used for some crafts (due to being a tree) and cleaning water. For usage as a supplement, *moringa oleifera* is recommended mostly as being a highly nutritious antioxidant. All parts of the Moringa tree (Figure 1 - 4) are edible and have long been consumed by humans. According to Fuglie[1] the many uses for Moringa include: alley cropping (biomass production), animal forage (leaves and treated seed-cake), biogas (from leaves-Figure 5a & b), domestic cleaning agent (crushed leaves-(Figure 6), blue dye (wood), fencing (living trees), fertilizer (seed-cake), foliar nutrient (juice expressed from the leaves), green manure (from leaves), gum (from tree trunks), honey- and sugar cane juice-clarifier (powdered seeds), honey (flower nectar), medicine (all plant parts), ornamental plantings, biopesticide (soil incorporation of leaves to prevent seedling damping off), pulp (wood), rope (bark), tannin for tanning hides (bark and gum), water purification[67-69] (powdered seeds).

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Figure 1 : Exotic Moringa's Tree in Himalaya

Figure 2 : Moringa's Tree in a Farm House

Moringa seed oil (yield 30-40% by weight), also known as Ben oil, is a sweet non-sticking, non-drying oil that resists rancidity. It has been used in salds, for fine machine lubrication, and in the manufacture of perfume and hair care and health (Figure 8) products[2]. In the West, one of the best known uses for Moringa is the use of powdered seeds to flocculate contaminants and purify drinking water[3,4,5] (Figure 7)but the seeds are also eaten green, roasted, powdered and steeped for tea or used in curries[4]. This tree has in recent times been advocated as an outstanding indigenous source of highly digestible protein, Ca, Fe, Vitamin C, and carotenoids suitable for utilization in many of the so-called "developing" regions of the world where undernourishment is a major concern.

Figure 3 : Moringa's Tree in Village Environs

Figure 4 : Moringa's Tree on Hilly Footpath

While It's indeed nutritious, supplemental dosages are too low to aquire adequate nutrition from and this claim is not relevant; It's a relatively potent antioxidant, and while it seems to be less potent than other herbs when tested outside of a living system it

does appear to be quite potent when tested in living models. Of importance is that all parts of Moringa are edible and also effective when used for treating various diseases. As earlier said, Moringa is traditionally used in the treatment of several diseases of chronic conditions. This has prompted scientific research by the WHO, universities and organizations who have verified and concluded on most of its diverse medicinal properties on an on-going basis. Of utmost importance is its ability to aid in the cure of those diseases without any side effects or allergic reactions commonly experienced with western medicines. Also, since dietary treatment is one of the core programs in treating systemic conditions like Hypertension, Diabetes, Anaemia, kidney conditions, etc, Moringa combined the rare dual role as the ideal meal supplement and ideal medicine. Moringa has demonstrated its effectiveness in the management and/or treatments of Hypertension & Blood Pressure, Cancer & Tumor, Diabetes, AIDS, Arthr itis, Rheumatism, Asthma, Ulcer, Prostrate problems, Erectile dysfunction, Sexual virility, Cholesterol Control, Syphilis and many others. Due to its multidimentional benefits, *Moringa oleifera* is called the miracle tree, the tree of life, mother's best friend, etc.

The Moringa tree gained popularity because of its high uses in traditional medicine originally by the Indians. Preparations (e.g. extracts, decoctions, poultices, creams, oils, emollients, salves, powders, porridges) are not quite so well known[12]. Presently, numerous scientific investigations have confirmed the effectiveness of these traditional remedies. Also based on research the plant is very nutritious, earning it the WHO candidate in the fight against malnutrition.

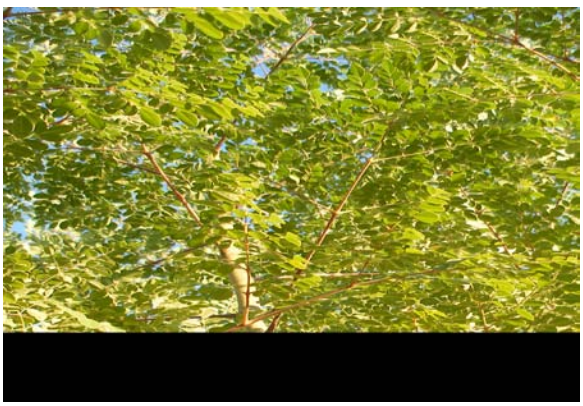


Figure 5 a : Moringa's Twigs with Leaves

Figure 5 b : Moringa's Fresh Leaves

II. Nutritional Importance of Moringa

Moringa is traditionally part of the staple food diet of many countries like India, Thailand, Cambodia, Sri Lanka, etc. and even the Hausas in northern Nigeria. It's estimated to have more than 92 verifiable cell-ready nutrients, 46 types of antioxidants[70-77] and 36 anti-inflammatories all readily available to the body.

Nutritional assessment of the raw Moringa leaf/100g

Energy 64kCal (270kJ); Carbohydrates 8.28 g; Dietary Fiber 2.0 g; Fat 1.40 g; Protein 9.40 g; Water 78.66 g; Vitamin A equiv 378 ug (47%); Thiamine (Vit B1) 0.257 mg (22%; Riboflavin; Vit B2) 0.660 mg (55%); Niacin (Vit B3) 2.220 (15%); Panthothenic acid (Vit B5) 0.125 mg (3%); Vitamin B6 1.200 mg (92%); Folate (Vit B9) 40 mg (10%); Vit c 51.7 mg (62%); Ca 185 mg (19%); Fe 4.00 mg (31%); Mg147 mg (41%); Mn 0.36 mg (17%); P112 mg (16%); P 337 mg (7%); Na 9 mg (1%); Zn 0.6 mg (6%) [Source: USDA Nutrient Database] Since dried Moringa leaves retain their nutrient content, It's possible and convenient to convert them into leaf powder which is easy to make, store and use. Moringa has the unique advantage of being somewhat tastelss so it makes excellent nutritional supplement that can be added to any dish or taken on its own. This is why Moringa is being advocated as "natural nutrition for the tropics." The great majority of multivitamins available today are synthesized and chemically formulated so most of them are not easily absorbed by the body while Moringa is a natural whole food source for vitamins, minerals, proteins, antioxidants and other important components that the body relies upon to stay healthy. Regular intake of Moringa will give benefits of increased energy, greater alertness, better endurance, increased focus, mental clarity, strong immune system, etc. also rare for a plant source, Moringa leaves contain all

the essential amino acids (usually found only in animal products like eggs) in good proportion including argemine and histidine which are especially important for infants. Hence, Moringa leaf is a food source for infants, children, pregnant women and everybody.

The reason for the increased potency in living models is not known (although It's possible that it can induce genetic transcription similar to SFN (Figure 7) since the bioactives are similar in structure), but the antioxidant properties seem to underlie the vast majority of benefits associated with this supplement. There are also antiinflammatory effects that, while less studies, seem to be quite effective; one of the bioactives, RBITC (*rhodamine B isothiocyanate)*, is effective in suppressing macrophage activation in the nanomolar range which is worth some future research into. Beyond that, there does appear to be a nice anti-diabetic effect that has gone some very preliminary human testing which suggests that this plant may benefit pancreatic function and reduce blood glucose secondary to that.

Figure 6 : Moringa's Crushed Leaves

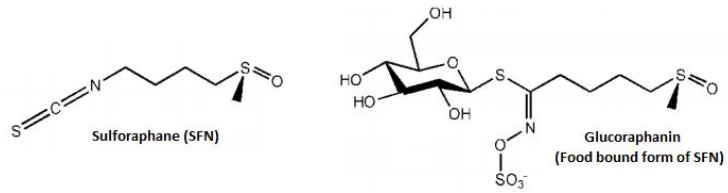


Figure 7 : SFN (Sulforaphane) & Glucoraphanin - food bound form of SFN

Now, despite the plant being referred to as 'nontoxic' this does not appear to be the case. While supplemental dosages listed below appear to be safe from all tested toxicity a relatively small increase (3-4x the recommended does) is known to cause genotoxic damage and may promote cancer formation whereas doses higher than that cause overt organ damage (mostly liver and kidneys).

Figure 8 : Healthcare produce of M olifera [1. Nutritional trendy capsules & 2. Tea Bags]

OUTLINED THERAPEUTIC APPLICABILITY OF MORINGA'S TREE

Figure 9

Figure 10 a & B : Moringa' pods (fresh to dry)

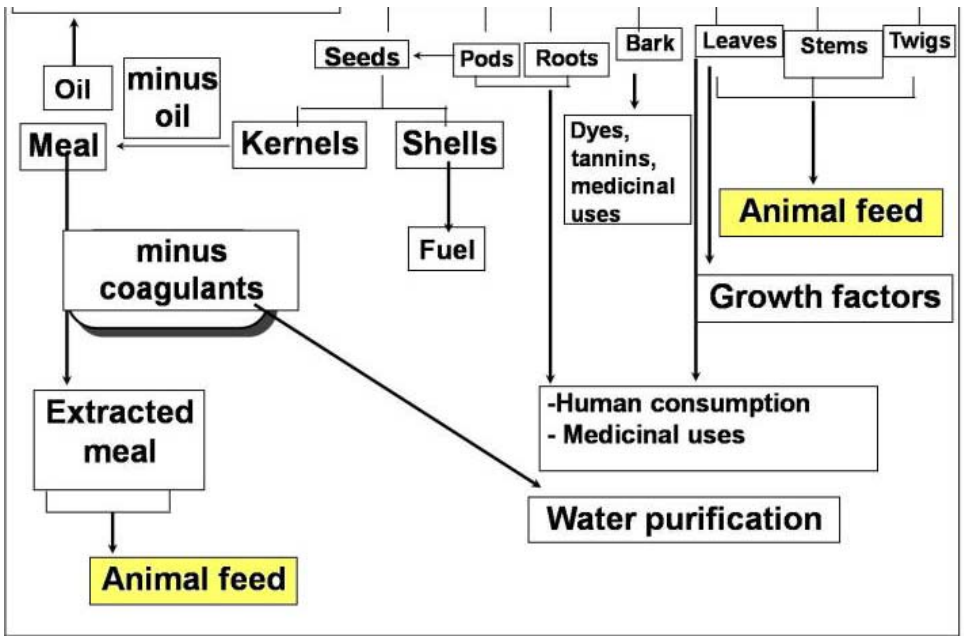
Comparison (g/g) of Moringa leaves' (fresh & dry) nutrients with oranges, carrots, milk, bananas, spinach & yoghurt [64-66].

Contents in Moringa's fresh leaves: 7x the Vit C of Oranges; 4x the Vit A of carrots 4x the Ca of Milk; 3x the K of Bananas; 4x the Fe of Spinach 2x the Protein of Yoghurt

Contents in Moringa's dried leaves: 4x the Vit C of Oranges; 10x the Vit A of carrots; 17x the Ca of Milk; 15x the K of Bananas; 25x the Fe of Spinach; 9x the Protein of Yoghurt Moringa

III. Apraise on Biochemical Charter & Phytochemistry

Because of the chemical complexity of the *M. oleifera,* apparent therapeutic effects could be due to the combined actions of various bioactive components found in the plant, including trace metal ions, vitamins, alkaloids, carotenoids, polyphenols, fats, carbohydrates, and proteins[14]. Some compounds may collectively affect broad aspects of physiology, such as nutriment absorption and processing, redox state, or immunity.*Moringa oleifera* leaves contain phytosterols such as β-sitosterol[15]. These compounds can reduce intestinal uptake of dietary cholesterol[16]. They could partly account for the decrease of plasma cholesterol and the increase of fecal cholesterol observed in rodents treated with *M. oleifera* leaves[17-18]. *M. oleifera* leaf powder also contain about 12% (w/w) fibers[19]. Dietary fibers reduce gastric emptying[20]. They may partly explain the greater stomach content, the improved OGTT (oral glucose tolerance test) response in treated GK (Goto-Kakizaki) diabetic rats[21], as well as the progressive improvement of PPBG (post-prandial blood glucose) levels in treated T2DM (type-2 diabetes mellitus) patients[22].



Graphic representation of M oifera Lim. applicability

Figure 11

The viability and functionality of a cell partly depends on a favorable redox state, i.e., on its ability to prevent excessive oxidation of its macromolecules, including DNA (deoxyribose nucleic acid), proteins, and lipids[23]. ROS (reactive oxygen species) and free radicals are the major mediators of the oxidative process. Cellular inability to reduce ROS leads to oxidative stress. All cells are variably capable of endogenous self-protection against this stress through the actions of enzymes such as catalase, superoxide dismutase, and glutathione peroxidase, as well as through reducing molecules such as glutathione. Nutritional antioxidants such as vitamins A, C, and E provide additional protection from the stress[24]. Oxidative stress is widely accepted as a major contributing factor in the pathogenesis of CVD (cardiovascular disease) and diabetes[25,26]. A recurring explanation for the therapeutic actions of *M. oleifera* medication is the relatively high antioxidant activity of its leaves, flowers, and seeds[27-36].

Glucosinolates are characterized by β-thioglucoside *N*-hydroxysulfate motif. In *M. oleifera* leaves, most phytochemicals of this class carry a benzyl-glycoside group linked to the single carbon of the motif. The most abundant of them is 4-*O*-(α-l-rhamnopyranosyl-oxy)-benzylglucosinolate, otherwise known as glucomoringin[35]. Enzymatic hydrolysis of the glucosinolate motif of members of this class leads to the formation of corresponding isothiocyanates, thiocyanates, or nitriles. Several of these by-products have been shown to possess antihypertensive properties[37-39]. Flavonoids and phenolic acids are collectively referred to phenolic compounds.

The structural skeleton of flavonoids is made of two aromatic rings joined by a 3-C link; that of the sub-

class of flavonols is 3-hydroxy-2-phenylchromen-4-one, Quercetin and kaempferol, in their as 3′-*O*-glycoside forms, are the predominant flavonols in *M. oleifera* leaves. The sugar moieties include, among others, rhamnoglycosyl (rutinosides), glucosyl (glucosides), 6′ malonyglucosyl, and 2′-galloylrutinoside groups[35, 41,42]. Biologically, flavonoids are best known for their antioxidant properties, but their metabolic pathways of activity remain to be fully elucidated[43]. Phenolic acids range of fairly unique compounds. In particular, this have benzoic acid and cinnamic acid as backbones, with one or several (-OH)hydroxyl groups . Chlorogenic acid, which is an ester of dihydrocinnamic acid (caffeic acid) and quinic acid, is a major phenolic acid in *M. oleifera* leaves. The flavonol quercetin is found at concentrations as high as 100 mg/100 g of dried *M. oleifera* leaves[44]predominantly as quercetin-3-*O*-β-d-glucoside also known as isoquercitrin or isotrifolin (Figure 14.)

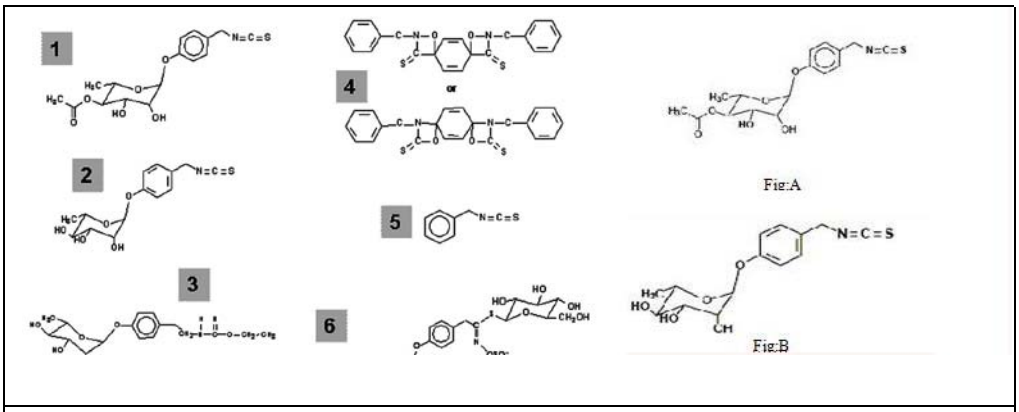


Figure 12 : Chemical Structures 1,2,3,4,5,6,A,B

Quercetin is a potent antioxidant[45] with multiple therapeutic properties. It can reduce hyperlipidemia and atherosclerosis in HCD (high-cholesterol diet) or HFD (high-fat diet) rabbits [46,-48]. It has shown anti-dyslipidemic, hypotensive, and anti-diabetic effects in the obese Zucker rat model of metabolic syndrome[49]. It can protect insulin-producing pancreatic β cells from STZ(streptozotocin) -induced oxidative stress and apoptosis in rats[50]. Its hypotensive effect has been confirmed in a randomized, double-blind placebo-controlled, human study[51]. Chlorogenic acid can beneficially affect glucose metabolism. It has been shown to inhibit glucose-6-phosphate translocase in rat liver, reducing hepatic gluconeogenesis and glycogenolysis[52-53]. It was found to lower PPBG in obese Zucker rats[54]. In OGTT experiments performed on rats or humans, it reduced the glycemic response in both species[56,57]; in rodents, it also reduced the glucose AUC (area under the curve)[55]. Its anti-dyslipidemic properties are more evident as its dietary supplementation has been shown to significantly reduce plasma TC and TG in obese Zucker rats or HFD mice[58] and to reverse STZ -induced dyslipidemia in diabetic rats[59].

The alkaloid moringinine was initially purified from *M. oleifera* bark[60]. and later chemically identified as benzylamine[61]. It's also present in leaves. This substance was suspected to mediate the hypoglycemic effect of the plant. An early study showed that Wistar rats provided with drinking water containing 2.9 g/L of benzylamine for 7 weeks exhibited a reduced hyperglycemic response in IPGTT (intraperitoneal glucose tolerance test), suggesting improved glucose tolerance[62]. More recently, the effect was further explored using HFD -fed, insulin-resistant C57BL/6 mice taking an estimated daily dose 386 mg/kg-body weight in drinking water for 17 weeks. Compared to untreated controls, these mice gained less weight, had reduced FPG (fasting blood glucose) and PTG (plasma triglyceride) and were more glucose tolerant (Iffiu-Soltesz et al., 2010). Niaziminin is a mustard oil glycoside initially isolated (along with other glycosides such as niazinin and niazimicin) from ethanolic extracts of *M. oleifera* leaves, based on their hypotensive properties on Wistar rats. At 1 mg and 3 mg/kg-body weight, these compounds caused a 16–22 and a 40–65% fall of (MABP) mean arterial blood pressure respectively[63].

Other active isothiocyanate glycosides and thiocarbamates were isolated from the plant using the same bioassay[64-66]. This compound was isolated from *M. oleifera* roots and structurally identified as *N*-benzoylphenylalanyl phenylalinol acetate . At 25 μM, this unusual dipeptide derivative inhibited by nearly 90% the secretion TNFα and IL-2 from lipopolysaccharide-stimulated peripheral blood lymphocytes in culture. It had no effect on IL-6 secretion This inhibitory activity may contribute to the anti-inflammatory[67]. properties of the plant. An examination of the phytochemicals of Moringa species affords the opportunity to examine a range of fairly unique compounds. In particular, this

plant family is rich in compounds containing the simple sugar, rhamnose, and it's rich in a fairly unique group of compounds called glucosinolates and isothiocyanates. For example, specific components of Moringa preparations that have been reported to have hypotensive, anticancer, and antibacterial activity include 4-(4'-*O*-acetyl-a-L-rhamnopyranosyloxy)benzyl isothiocyanate[6], 4-(a-L-rhamnopyranosyloxy)benzyl isothiocyanate[7], niazimicin[8], pterygospermin[9], benzyl isothiocyanate[10], and 4-(a-L-rhamnopyranosyloxy)benzyl glucosinolate[11]. While these compounds are relatively unique to the Moringa family, it's also rich in a number of vitamins and minerals as well as other more commonly recognized phytochemicals such as the carotenoids (including β-carotene or pro-vitamin A). These attributes are all discussed extensively by Lowell Fuglie[1] and others, and will be the subject of a future review in this series.

IV. Gastronomic Draw on & Socioeconomic Status

The M olifera pod (munga/ saragwa/saragwe) is often refereed as drumstick tree and horshredish tree in English. In south India, it's used to prepare a variety of sambars and is also fried. In other parts of India, especially West Bengal, and also in a neighbourning country like Bangladesh, it's enjoyed very much. It's made into a variety of curry dishes by mixing with coconut, poppy seeds and mustard or boiled until the drumsticks are semi-soft and consumed directly witout any extra processing or cooking. It has find utility in curriesd, sambars, kormmas, and dals, although it's used to add flavor to cutlets, etc. In Maharastra, the pods are used in sweets and curries called Aamatee. Tender drumstick leaves, finally chopped, are used to garnish veggie dishes, dals, sambars, salads, etc. also, it has gained popularity to be ysed as coriander, as these leaves have high therapeutic significance. Its flowers, in some regions, are gathered and cleansed to be cooked with basan to make pakoras. It's preserved by canning and ex[ported worldwider[77,81].

Figure 13 : Moringa's seeds deturbitifies water

Figure 14 : Moringa's flowers, seeds (fresh & crushed)

M olifera is one of the most tropical trees. The relative ease with which it propagates through both sexual and asexual means and its low demand for soil nutrients and water after being planted makes its production and management easy.Introduction of this palnt into a farm, which has a biodiverse environment, can be beneficial for both the owner of the farm and the surrounding eco-system. Diostinction of cultivators has not yet been formally carried out. M olifera was well known to the ancient world, but only recently has it been rediscovered as a multipurpose tree with a tremendous multiplicity of potent applicability[21,31,40]. *Moringa oleifera* Lam. is the most "underutilized" multipurpose tropical crop. The leaves, tender pods and seeds could serve as a valuable source of nutrients for all age groups. The leaves, tender pods and seeds are sources of vitamins, minerals and proteins. The leaves and branches can be used as feed for livestock and fish. Due to the high nutrient content of the leaves, moringa can be incorporated into the mulching system. The dry seed suspension is a known natural coagulant and coagulant aid with antibacterial activity. Dry moringa seeds can be used in place of alum to treat turbid water and reduce bacteria in drinking water (Figure 11). Geographically, many of developing countries are located in the tropical and sub-tropical regions of the world where *M. oleifera* grows and is cultivated. If validated by medical science, dietary consumption of this plant could be advocated in these and other countries as an inexpensive prophylactic strategy against diabetes mellitus (DM), and chronic dyslipidemia a risk factor for cardiovascular disease (CVD). Chronic hyperglycemia is an indicator of DM and chronic dyslipidemia a risk factor for CVD. These metabolic disorders are global epidemics[13].

V. Moringa: A Source of II Generation Biodiesel

With years of continuing research, experiments and trials has provided an adage to find and develop 2nd generation biodiesel feedstock with low cost input technology. Moringa oleifera is a very fast growing tree; it commonly reaches four meters in height just 10 months after the seed is planted and can bear fruit within its first year. Its seeds are triangular in cross-section (30 to 50 cm long) and legume-like in appearance (Figute 12a,b.c).

Figure 15 a : Moringa's seeds

Figure 15 b : Moringa'slegume shaped - triangular seeds

Figure 15 c : Moringa's preserved seeds

These seeds have oil rich black and winged seeds, which can be crushed to produce biodiesel (Figure 13). Moringa could yield +3 ton oil/ ha and that it could be used for food in times of shortages. The seeds contain 30%t o 40% oil that is high in oleic acid. The meal yields about 61% protein. Biodiesel made from Moringa has better oxidative stability than biodiesel made with most other feedstocks the crop's multiple dimensions would make it attractive to farmers worldwide. Other than biodiesel, the pods can also produce highly nutritious edible seeds. Their pods are harvested, meaning that the trees keep on growing, using water and reducing the high water table whilst sequestrating carbon. The Moringa oleifera trees must be regarded as a sure source of 2nd Generation Biodiesel. The Moringa oleifera tree that has enough credentials: a higher recovery and quality of oil than other crops, no direct competition with food crops as It's a edible source of fuel, and no direct competition with existing farmland as can be grown for both purpose same time.

VI. Conclusion

A large number of reports on the nutritional qualities of Moringa now exist in both the scientific and the popular literature. This fast growing tree now well now for its employability in human nutrition, dye, fodder, and water deconramination as it bears an imposing assortment for day to day welfare of wellbeing and socioeconomic comfort. Extensive field reports and ecological studies forming part of a rich traditional medicine history, claim efficacy of leaf, seed, root, bark, and flowers against a variety of dermal and internal infections. Moringa seed contain oil that can be used for various industrial purposes and as vegetable oil for human consumption or as biofuel. Though apparently native only to restricted areas in the southern foothills of the Himalayas, *M. oleifera* is cultivated in all the countries of the tropics. Outstanding oil is derived from the seeds, which is used for cooking and lubrication of delicate mechanisms. Leaves can be eaten fresh, cooked, or stored as dried powder for many months without refrigeration, and reportedly without loss of nutritional value. Moringa is especially promising as a food source in the tropics because the tree is in full leaf at the end of the dry season when other foods are typically scarce. We can clearly affirm the superiority of Moringa over the other foods. As it was found that Moringa leaves contain more Vitamin A than carrots, more Ca than milk, more Fe than spinach, more Vitamin C than oranges, and more K than bananas," and that the protein quality of Moringa leaves rivals that of milk and eggs. Clearly much more research is justified, but just as clearly this will be a very fruitful field of endeavor for both basic and applied researchers over the next decade. Moringa preparations (e.g. extracts,

decoctions, poultices, creams, oils, emollients, salves, powders, porridges) are not quite so well known. A plethora of traditional medicine references attest to its curative power, and scientific validation of these popular uses is developing to support at least some of the claims. Moringa preparations have been cited in the scientific literature as having antibiotic, antitrypanosomal, hypotensive, antispasmodic, antiulcer, anti-inflammatory, hypocholesterolemic, and hypoglycemic activities, as well as having considerable efficacy in water purification by flocculation, sedimentation, antibiosis and even reduction of Schistosome cercariae titer. M. oleifera is also of interest because of its production of compounds with antibiotic activity such as the glucosinolate 4 alpha-L-rhamnosyloxy benzyl isothiocyanate. Other research has focused on the use of *M. oleifera* seeds and fruits in water purification. Of importance is that all parts of Moringa are edible and also effective when used for treating various diseases.any researches continue to be conducted on further establishment of Moringa as a potent medical solution and many are directed towards the acceptance and commercialization of Moringa bio active components. Meeting all bodies nutritional requirements will naturally curb junk food cravings and supply with the energy needed to maintain a healthy & active lifestyle.

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