

NIGER SEED AS A NOURISHING AND THERAPEUTIC AGENT – A REVIEW

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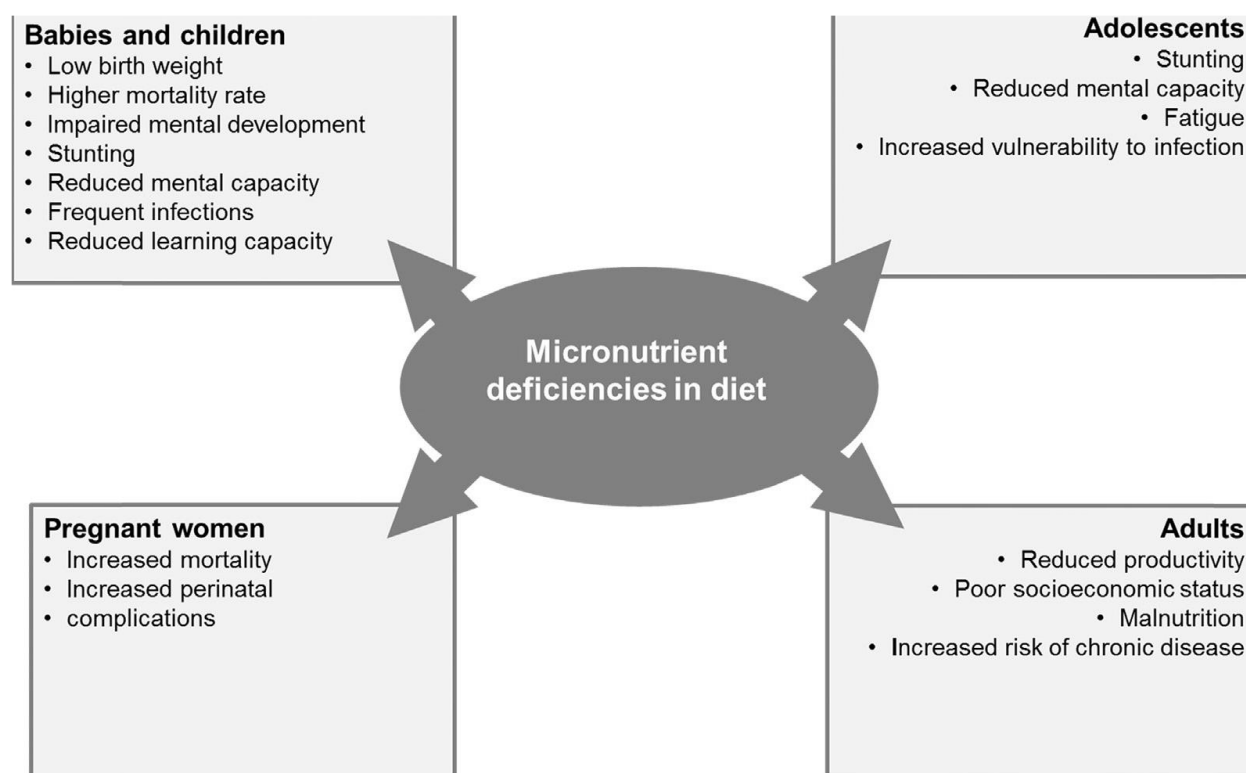
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ABSTRACT- Micro nutrient deficiency and malnutrition, anemia are a major problem of developing countries worldwide. Major population of the world is vegetarian, so the availability of good quality of protein is low. Oil seeds are the most important food grains, which are rich in protein, essential fatty acids, vitamins and minerals. Oil seeds protein is major source of energy in malnutrition. Many oil seeds are utilized as a food and raw material for preparation of value added nutritious food products. Niger seed is one of them. They even have nutraceutical value. Major deadly disease, hypertension, diabetes, and cancer can be cured by the supplementation of oil seeds in regular diet. Some studies shows that tribal and rural level use of Niger seed root, leaves, stem, oil were used in the treatment of various disease viz., microbial infection, burn, cough, contraceptives, arthritis, CHD, skin disease and syphilis. This article reviews the potential health effects of Niger seed.

Key words- Niger seed, Niger seed oil nourishing, therapeutic uses.

Introduction

In developing countries micronutrient is a major public problem which affecting majority of children, women and adults. There is a requirement to develop food based approaches to treat malnutrition and iron deficiency anaemia. In India major reason of malnutrition is poverty because it limits the amount of food available causing wasting, stunting and underweight. Confirming to national family health survey-4 (2015-2016) reports that children age 6-59 month who are anemic (<11.0g/dl) 55.9% suffering from anaemia in urban and 59.4% suffering for rural, total no. of 58.5% children suffering from anaemia both side, 53.0% women are anaemic and 22.7% men suffering from anaemia both side. Hunger and malnutrition is directly and indirectly responsible for death of world wide. The three most prevalent features of micronutrient malnutrition are iron that not affect many people but also lead to the burden of disease such as high susceptibility to infection, birth defects, cognitive losses and premature mortality. Recent study reports that Oil seed are leading suppliers of good quality protein. Oil seeds add a significant nutritional value to the human diet due to their high quality of protein, vegetable oil and oil soluble vitamin. In the present time, many oil seeds are include in human food, which have been used since ancient times in the form of medicine. Oil seeds utilized as a food and raw material for preparation of value added nutritious food product. Many oil seeds produced in India Niger seed is one of them. In the course of present investigation this articles reviews the potential effect of utilization and therapeutic study on Niger seed.



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About Niger seed-

Niger seed (*Guizotia abyssinica* Cass.) is a noteworthy oil seeds. Niger seed, *Guizotia abyssinica* has a place with family Asteraceae. It is an essential oil seed trim along with restorative properties basically developed in India and Ethiopia. It is additionally known by a few names like Noog, Niger, Nyger, Nyjer, Khursani and Medical name is semen *Guizotiae oleiferae*. It contributes around 3% of India and 50% of Ethiopian oil seed creation. Niger seed is being developed in numerous nations of tropical and calm zones. Ethiopia and India are the main Niger seed delivering nations of the world. It is also a minor oilseeds crop in some other African countries (Riley & Belayneh, 1989). In India, Niger is being developed in the States of Madhya Pradesh, Orissa, Maharashtra, Bihar, Karnataka, Andhra Pradesh, Uttar Pradesh, Rajasthan, Gujrat and Tamil Nadu. The yearly production of Niger seeds in India is around 180,000 tons (Getinet and Sharma, 1996). Niger seed is an imperative oilseed trim alongside therapeutic riches essentially developed in India and Ethiopia.

A brief description and morphology of Niger seed-

Niger seed is an annual dicotyledonous herb. Germination is epigeal and seedlings have pale green to brownish hypocotyls and cotylendons (Seegeler 1983). Niger seeds have been utilized as food for birds and cattles. To a restricted degree they have been utilized as a part of human eating regimens. The family *Guizotia* comprises of six species, of which five, including Niger, are local to the Ethiopian good countries. It is a dicotyledonous herb, respectably to very much fanned and grows up to 2 m tall. The leaf margin morphology varies from pointed to smooth and leaf color varies from light green to dark green, the leaf surface is smooth. The leaves are arranged on opposite sides of the stem and the top the leaves are arranged

in alternative motion, leaves length are 10-20cm and 3-5 cm wide and flower is yellow and rarely slightly green. The flower head are 15.5 cm in diameter with 0.5-2 cm long ray florest. The stem of Niger is smooth to slightly rough and plant is usually moderately to well branched. Niger is usually grown on light poor soils with coarse texture (Chavan 1961). It is an annual herb grown for edible oil and seed. The seed technically a fruit called achene often sold as bird feed. Noug (*Guizotia abyssinica*) is a species in the Compositae that is used traditionally as an oilseed crop in Ethiopia, Eritrea and less extensively in India and several other countries in Africa and South Asia (Getinet & Sharma 1996). It has been recognized as a semi-domesticated crop (Dempewolf et al. 2008). Noug is closest crop relative sunflower has a wealth of genomic resources available owing to its global importance as an oil seed crop. It is the planted as a rainfed trim in kharif and rabi season. Niger seed is otherwise called ramtil, kalatil, and sorguja in India. Niger seed is a concentrated replete of vitality, protein, and press and furthermore a rich source linoleic corrosive a fundamental unsaturated fat. The oil and seeds are totally free from any harmful substance. Niger seed (*Guizotia abyssinica*) is a sort of oilseed trim which is accounted for to contain high measure of iron (56.7 mg/100g) in plant based sustenances and might be of huge help in enhancing the iron status of defenseless populace gathering (Gopalan 2000). However, the iron substance of Niger seeds is high yet because of the nearness of phytic corrosive, the bio-accessibility is low. This hole can be satisfied by utilizing the locally situated different handling methods like drenching, germination and cooking. In this way remembering these things the present examination was attempted with a particular target that is to evaluate the impact of handling on the aggregate iron, bioavailable iron and the counter supplement, phytic corrosive in Niger seeds.

Nutritional Profile-

Niger seed is a fortune trove of supplements containing 483 calories, oil (30% - 40%), protein (10-25%), solvent sugars (12-18%), crude fiber (10-20%), moisture (10-11%) and ashes (4%). Concentrates announced the vitamin and mineral substance of Niger seed as 0.43 mg/100 g thiamine, 0.22– 0.55 mg/100 g riboflavin, 3.66 mg/100g niacin 50– 587 mg/100 g calcium, and 180– 800 mg/100 g phosphorus. The seed contains around 40% oil with unsaturated fat structure of 75-80% linoleic corrosive, 7-8% palmitic and stearic acids, and 5-8% oleic corrosive (Getinet and Teklewold 1995). The Indian kinds contain 25% oleic and 55% linoleic acids (Nasirullah 1982).

Health benefits of Niger seed and Niger seed oil in human-

The high level of vitamin K₁ may be the most exclusive health promoting characteristic of Niger seed oil. The significance of dietary vitamin K has recently increased. Here we know, the importance of vitamin K as a blood clotting agent and a fat soluble vitamin that function as a co-enzyme and is involved in the synthesis of no. of protein participating in blood clotting and metabolism (Damon et al., 2005). In other studies, vitamin K also play a important role as a co-factor for post- translation carboxylation of specific glutamate residues to gamma – carboxy glutamate residue in several blood coagulation factor and coagulation inhibitors in the liver, as well as a variety of extra hepatic proteins such as the bone protein osteocalcin (Shearer 1992). Vitamin K reduces the risk of heart disease, kills cancer cells, and enhances skin health and may have antioxidant properties (otles and cagindi, 2007). High phylloquinone intake are markers of dietary and lifestyle pattern that is associated with lower coronary heart disease (CHD) risk in men (Erkkila et al., 2007). Niger seed oil appears to be nutritionally valuable, as the high content of linoleic acid is known to prevent cardiovascular disease and to be the precursor of structural components of plasma membranes and some metabolic regulatory compound (Vles and Gottenbos, 1989). Linoleic acid lowers LDL cholesterol with minimal effects on HDL cholesterol (Mensink and katan, 1992). Linoleic acid may also decrease arrhythmias (Charnock et al 1991) and improve insulin sensivity (laaksonen et al 2002; erkkila et al 2008). The level of total tocopherols which is significantly higher than that estimated in other oils rich in linoleic

acid identifies oil as the nutritionally valuable. Further more, it is good source of vitamin E because almost all of the tocopherols are @ tocopherol (Dutta 1994, Ramadan and Moersel 2002a;2002;Marini 2003).

Other studies shows Niger seed is utilized as a sustenance for human utilization the seeds is warmed in a pot over a start shooting, smashed with a pestle in a mortar and then mixed with squashed pluses seeds to plan 'wot' in Ethiopia (seegaler1983). chibto and litlit are set up from Niger seeds squashed and blended with cooked grains which is favored be nourishment for growing young boy. In Ethiopia Niger seeds are principally developed for its palatable oil. There are reports that Niger seeds oil utilized for contraception and for the treatment of syphilis (belayneh, 1991). Niger sprouts blended with garlic are utilized for the treatment of cough (Getinet and Teklewold, 1995). A Niger-based agar medium can be used to distinguish *Cryptococcus neoformans* (Sant) Vaill, a fungus that causes a serious brain ailment, from other fungi (Paliwal and Randhawa 1978).

Rheumatoid- rheumatoid joint pain it is an immune system illness that outcome in an endless precise fiery issue that may influence many tissue and organs, yet chiefly assault adaptable joints bringing about serious torment. Niger seed can be utilized to treat the rheumatoid by use of oil on the parts where the agony is available by intermittently utilization of the Niger seed oil, the danger of the request issue can be kept away from.

In bundelkhand region people uses of Niger seed used a thick paste of the stem together with leaf was applied at joint for treatment of rheumatism inflammatory disease. Boiling of seed leaves are used, sprouted seeds were mixed with garlic and are used to treat cough frequency of double in a day or thrice during a day for cough. Microbial infection, burns, cough, contraceptive, inflammatory disease and syphilis by the various petitioners selected in different dose and period at the side of specific ways of preparation (sumeet dwivedi and seema kohali). *Guizotia* is incredibly helpful within the treatment of sure reasonably diseases and numerous ex and in situ conservation methods at the side of cultivation of species could also be adopted to prevent the species from extinction.

Role in anemia-

Niger seeds are a good source of iron. It contains about 56.7mg of iron / 100g of seed (Gopalan et al., 2007) which is comparatively higher than all other oilseeds, including soya. The percent dialyzable iron of most of the oil seed protein isolate is higher than soya protein isolate and ionizable iron of most of the oil seeds Reddy and Hotwani., 1993; Hegde 2009)

Parasiticide-

Intensive use of parasiticides has some time light-emitting diode to severe resistance in arthropods and helminthes of veterinary importance. Throughout the last twenty years important data in parasite neuroscience and endocrinology has accumulated that allows the event of recent screening procedures and many biological approaches for the invention of latest medication. Niger seed is novel biologically approaches to overcome against nematodes and arthropods.

Poultices-

Niger seeds additionally used as poultices which might be applied to the surface of the body to alleviate pain, itching, swelling and inflammation, abscesses, boils, etc.

Nourishment item as a supplement in human diet-

According to Byadagi and Geetha (2012) Regular things, for instance, chikki, laddoo and chutney powder were delivered by substituting the genuine fixings in the equation by Niger seed. Chikki was best recognized at 50 for every penny level of wire and 60 for each penny level joining was best recognized for both laddoo and chutney powder. Baranwal (2011) found in their examination that 25 g/day of Niger seed laddoo examine affirmed that supplementation can quickly enhanced iron status (Kumari and Bhatnagar 2011). Sutanuka hazzra (2015) reports that the examination affirms the discoveries of prior specified investigations the Niger seeds supplementation helps in expanding the hemoglobin level among ladies pallor. Niger seeds are utilized to make dry chutney that is accompariment with bread (chapati). They are additionally utilized as a zest in a few curries.

Conclusions-

On the basis of different studies and reviews it had been investigated shows that Niger seed is good source of high protein and iron, essential metals, free from toxic metal and hence safe for daily human consumption. Niger seed high in Linoleic acid good source of phytosterols which makes the oil nutritionally valuable. Many studies shows that processing of Niger seed (like – germination, roasting, soaking and dehulling of seeds) improving quality of protein digestibility, biological value, nutritional index, C-PER and after processing Niger seeds iron content not affected. Niger seed and oil in small amount can be treating various diseases (like- rheumatoid, CHD, syphilis). Oil seeds are an important source of macro and micro nutrient which have been not fully used to fight malnutrition and anaemia. Oil seed can be fortified in the food product. Consolidating of Niger seeds in small amount can be treating different diseases. Fortified the routine diet with Niger seed will certainly makes healthy human.

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