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Chemical composition, folk and modern uses of Fats and oil-a review

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SUMMARY

Fats and oils are edible phospholipids and these are refined from seeds, nuts, fruits, adipose tissues as well as animal milk. These are a vital food product. Animal fat consist of following fatty acids i.e. omega 3 fatty acid, omega 6 fatty acid, Omega-9 Fatty Acids, Vaccenic acid, Timnodonic acid, Stearic acid, Petroselinic acid, Palmitic acid, Octadecadienoic acid, n-6 polyunsaturated fatty acids, n-3 polyunsaturated fatty acid, Myristic acid, Margaric acid, Lauric acid, Gadoleic acid, Clupanodonic acid, Cetoleic acid, Cervonic acid, Caprylic acid, Caproic acid and Arachidic acid. Documented data showed that fats and oils of various animals species are used to treat various diseases like aching joints, wounds and injuries, impotency, allergy, sexual enhancement, menstruation problem, wounds, ear disease, skin blotches, sexual power, sexual stimulant, typhoid, ear infection, allergy, asthma, impotency, muscular pain, wound and toothache, wart, asthma, head pain, back-ache, skin burn and crack, wound, skin disease, allergy, rheumatism, erysipelas, anemia, fever, paralysis, sexual potency, and cancer.

Keywords: Phospholipids, Animal, Ethnomedicine, Fat

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INTRODUCTION

Fats and oils are edible phospholipids and these are refined from seeds, nuts, fruits, adipose tissues as well as animal milk. These are a vital food product. It is documented that 9.6 million metric tons ghee and butter are produced, while tallow production is approximately 6.6, and lard production is almost 5.8 million metric tons (FAO, 2014). In many cases, oils and fats in the fauna and flora act as a energy storage. Main ingredients of most vital phospholipids are links of lipids (triglycerols), which are consist of 3 fatty acids esterifies to a glycerol (Cheung and Mehta, 2015).

COMPOSITION OF ANIMAL FATS AND OIL

Animal fats and oils are lipids derived from animals; fats and oils are soli d and liquid at room temperature respectively. Fats and oils are consist of triglycerides (Council, 1976). Over 100 types of acids have been identified from different lipids of fauna and flora. Fatty acids are generally derived from phospholipids or triglycerides. Animal fat consist of following fatty acids i.e. “omega 3 fatty acid” (i.e. α-Linolenic acid,

docosahexaenoic acid, Eicosapentaenoic acid, Stearidonic acid), "omega 6 fatty acid" (i.e. γ-Linolenic acid, Dihomo-γ-linolenic acid, Arachidonic acid, Adrenic acid, Osbond acid), "Omega-9 Fatty Acids" (i.e. Palmitoleic acid, Oleic acid, Elaidic acid, Erucic acid), Vaccenic acid, Timnodonic acid, Stearic acid, Petroselinic acid, Palmitic acid, Octadecadienoic acid, n-6 polyunsaturated fatty acids, n-3 polyunsaturated fatty acid, Myristic acid, Margaric acid, Lauric acid, Gadoleic acid, Clupanodonic acid, Cetoleic acid, Cervonic acid, Caprylic acid, Caproic acid and Arachidic acid (Sanders, 2016).

ETHNOMEDICINAL APPLICATIONS OF FATS AND OIL

Documented data showed that fats and oils of various animals species i.e. irrawaddy dolphin (*Orcaella brevirostris*), streaked prochilod (*Prochilodus platensis*), Indian bullfrog (*Hoplobatrachus tigerinus*), Indian flap-shelled turtle (*Lissemys punctata andersoni*), Indus valley spiny-tail ground lizard (*Saara hardwickii*), Himalayan Serow (*Capricornis thar*), Indian rock python (*Python molurus*), Asiatic black bear (*Ursus* sp.), green pond frog (*Euphlyctis Hexadactylus*), hen (*Gallus* sp.), jackal (*Canis* sp.), mongoose (*Herpestes* sp.), bat (*Pteropus* sp.), wild boar (*Sus scrofa*), lizard (*Hemidactylus* sp.), goat (*Capra aegagrus hircus*), hare (*Lepus* sp.), deer (Cervidae), sheep (*Ovis* sp.), horse (*Equus* sp.), cow (Bos sp.), buffalo (*Bubalus bubalis*), cat (*Felis* sp.), turtle (Aspideretes sp.) and common leopard gecko (*Eublepharis macularius*) are used to treat various diseases like aching joints (Nijman and Shepherd, 2017), wounds and injuries (Martínez, 2013), impotency (Altaf *et al.*, 2018; Altaf *et al.*, 2020), allergy (Altaf *et al.*, 2018; Altaf *et al.*, 2020), sexual enhancement (Altaf *et al.*, 2018; Altaf *et al.*, 2020), menstruation problem (Yeshi *et al.*, 2017), Wounds, ear disease (Yeshi *et al.*, 2017; Kendie *et al.*, 2018), skin blotches, sexual power (Altaf *et al.*, 2017; Nijman and Shepherd, 2017; Haq *et al.*, 2020), sexual stimulant (Vijayakumar *et al.*, 2015b; Kendie *et al.*, 2018), typhoid, ear infection, allergy (Kim and Song, 2014; Vijayakumar *et al.*, 2015b), asthma, impotency (Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2017), muscular pain (Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b), wound and toothache (Kendie *et al.*, 2018), wart, asthma (Altaf *et al.*, 2017; Kendie *et al.*, 2018), head pain (Sreekeesoon and Mahomoodally, 2014), back-ache, skin burn and crack (Sreekeesoon and Mahomoodally, 2014; Altaf *et al.*, 2017), wound, skin disease, allergy (Vijayakumar *et al.*, 2015a; Altaf *et al.*, 2017; Bullitta *et al.*, 2018), rheumatism (Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2017), erysipelas, (Vijayakumar *et al.*, 2015a), anemia, Fever, paralysis, (Vijayakumar *et al.*, 2015a; Altaf *et al.*, 2017), pain, wound (Altaf *et al.*, 2017), arthritis (Altaf *et al.*, 2017), sexual potency, (Altaf *et al.*, 2020) and cancer (Altaf *et al.*, 2020) (Table 1).

Table 1: Ethnomedicinal applications of fats and oil.

Species	**Reported ailments**	**References**
Irrawaddy dolphin (*Orcaella brevirostris*)	Aching joints	(Nijman and Shepherd, 2017)
Streaked prochilod (*Prochilodus platensis*)	Wounds and injuries	(Martínez, 2013)
Indian Bullfrog (*Hoplobatrachus*	Impotency	(Altaf *et al.*, 2018; Altaf *et al.*,

tigerinus)		2020)
Indian Flap-shelled Turtle (*Lissemys punctata Andersoni*)	Allergy	(Altaf *et al.*, 2018; Altaf *et al.*, 2020)
Indus Valley spiny-tail ground lizard (Saara hardwickii)	Sexual enhancement	(Altaf *et al.*, 2018; Altaf *et al.*, 2020)
Himalayan Serow (*Capricornis thar*)	Menstruation problem	(Yeshi *et al.*, 2017)
Indian Rock Python (*Python molurus*)	Wounds, ear disease	(Yeshi *et al.*, 2017; Kendie *et al.*, 2018)
Asiatic black bear (*Ursus* sp.)	Skin blotches, sexual power	(Altaf *et al.*, 2017; Nijman and Shepherd, 2017; Haq *et al.*, 2020)
Green pond frog (*Euphlyctis Hexadactylus*)	Sexual stimulant	(Vijayakumar *et al.*, 2015b; Kendie *et al.*, 2018)
Hen (*Gallus* sp.)	Typhoid, ear infection, allergy	(Kim and Song, 2014; Vijayakumar *et al.*, 2015b)
Jackal (*Canis* sp.)	Rheumatism	(Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2017)
Mongoose (*Herpestes* sp.)	Rheumatism	(Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2017)
Bat (*Pteropus* sp.)	Asthma, sexual power	(Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2017)
Wild boar (*Sus scrofa*)	Muscular pain	(Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b)
Lizard (*Hemidactylus* sp.)	Erectile dysfunction	(Vijayakumar *et al.*, 2015b)
Goat (*Capra aegagrus hircus*)	Wound, toothache	(Kendie *et al.*, 2018)
Hare (*Lepus* sp.)	Wart, asthma	(Altaf *et al.*, 2017; Kendie *et al.*, 2018)
Deer (Cervidae)	Head pain	(Sreekeesoon and Mahomoodally, 2014)
Sheep (*Ovis* sp.)	Back-ache, skin burn and crack	(Sreekeesoon and Mahomoodally, 2014; Altaf *et al.*, 2017)
Horse (*Equus* sp.)	Wound, skin disease, allergy	(Vijayakumar *et al.*, 2015a; Altaf *et al.*, 2017; Bullitta *et al.*, 2018)
Cow (*Bos* sp.)	Anemia, Fever, paralysis	(Vijayakumar *et al.*, 2015a; Altaf *et al.*, 2017)
Buffalo (*Bubalus bubalis*)	Pain, wound	(Altaf *et al.*, 2017)
Cat (*Felis* sp.)	Arthritis	(Altaf *et al.*, 2017)
Turtle (Aspideretes sp.)	Sexual potency	(Altaf *et al.*, 2020)
Common leopard gecko (*Eublepharis macularius*)	Cancer	(Altaf *et al.*, 2020)

MODERN USES OF FATS AND OIL

Most powerful proof for useful outcome of omega-3 fats is its effects in cardiac problem. Such fats seem to assist the cardiac rhythm at slow pace and not diverge into lethal or strongly harmful inconsistent rhythm. These irregular rhythms give rise to most of the 500,000-additional, cardiac mortalities which take place every year in the USA. The “omega-3 fats” has a main role to slow down BP and also, up-to major doses, lessen triglycerides also cure inflammation, issues related to brain, thrombotic, fat deposition in arteries, along-with aging impacts (Leaf, 2007).

Majority of Americans take a far many of other necessary omega-6 fat as compare to omega-3 fats. Few specialists have uplifted the statement that such excessive taking in of omega-6 fats can cause issues, related to heart and or else, however this was not proved in humans (Breteler, 2000; Kalmijn, 2000; Haag, 2003; Willett, 2007; Yokoyama et al., 2007; Wilson, 2015). In the physical condition Professionals record Study, for instance, the relation of omega-6 to omega-3 fats wasn’t associated through peril of cardiovascular issues as together of these were helpful (Mozaffarian et al., 2005).

Analysts are enchanting a hard look by the side of a dissimilar kind of stability, this only flanked by likely belongings of oceanic and terrestrial flora of omega-3 fats on prostate malignancy. Consequences since the Health Professionals record revise and others illustrate that a person whose diet plan is loaded in EPA and DHA (largely as of fish and seafood) are fewer expected to build up higher prostate cancer than those among small ingestion of “eicosapentaenoic acid” and “docosahexaenoic acid” (Leitzmann et al., 2004). By the side of the similar instance, few-but not whole-studies illustrate an add to in prostate malignancy and highly developed prostate malignancy between men by means of elevated use of alpha-linolenic acid. On the other hand, this outcome is contradictory. In the incredibly outsized lung, colorectal, prostate, and ovarian, for instance, there was no connection amid ALA use and premature, delayed, or later prostate malignancy (Koralek et al., 2006).

INDUSTRIAL USE OF FATS AND OIL

The agro-food industry gives rise to great number of throw away that supply to ecological infectivity. Animal fat desecrate compose a few of the mainly appropriate desecrate and the management of such desecrate is relatively precious for the reason that ecological rules are relatively harsh. Fraction of such expenses may compact during the cohort of bio-energy (Baladincz and Hancsók, 2015; Rosson et al., 2020). Biodiesel comprises a suitable inexhaustible resource of energy for the reason that it is recyclable, harmless and has a high-quality ignition production outline and can be merged up to 20% through fossil diesel for its utilization in several countries. Transesterification through alkaline catalysis is at rest ideal at engineering flora produce biodiesel (Lawan et al., 2020).

Current Evolution in heterogeneous catalysts so as to be effortlessly improved, reconstructed and discussed, as fine as powerless lipases with enlarged immovability and conflict to alcohol deterioration, are hopeful for upcoming trade exploit (Nigam and Singh, 2011; Toldrá-Reig et al., 2020).

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