ANTI-OBESITY ACTIVITIES OF FRUIT EXTRACTS OFSHOREA ROBUSTA GAERTNER F., MOMORDICA CHARANTIA L., MORINDA CITRIFOLIA L. AND CENTELLA ASIATICA L – REVIEW OF RELATED LITERATURE

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ABSTRACT:

Plants are fundamental piece of human development. Restorative plants are additionally been depended upon by over 80% of the world populace for their essential medical service's needs. Medications dependent on the plants are of prime significance for a few cures in customary and traditional medication all through the world also, fills in as a substitute for drug flexibly in present day medication. Restorative plants with remedial properties are utilized for the treatment of numerous irresistible sicknesses of people as they contain numerous bioactive phytochemical constituents, which are of remedial impacts. The restorative properties of the plants are predominantly because of the presence of optional metabolites like alkaloids, cardiovascular glycosides, tannins, flavonoids, saponins, lessening mixes, minerals and vitamins. These research review helped researchers understand anti-obesity activities of fruit extracts of medicinal plants. It is important to conduct more studies plants with remedial properties.

Key Words: *literature review, anti-obesity, Shorea Robusta, rat, fruit extract.*

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INTRODUCTION

Obesity is a genuine medical condition in industrialized nations and is a rising plague of this new century. The World Health Organization has broadcasted this to be a worldwide pandemic. Overweight and weight are unquestionably more than restorative issues; they are related with expanded danger for diabetes, hypertension dyslipidemias coronary illness, pneumonic maladies, osteoarthritis, and then some.

The most well-known anatomical portrayal alludes to a commonly instinctive or a pervasively subcutaneous affidavit of fat. The proportion of abdomen outline to hip circuit has effectively defined the level of focal (i.e. instinctive) versus fringe (i.e. subcutaneous) Obesity. It realized that instinctive adiposity is a significant danger factor for metabolic complexities of Obesity, while subcutaneous fat is by all accounts substantially more amiable, and at times even defensive against the advancement of metabolic difficulties.

From an etiologic point Obesity can be on a very basic level named essential or optional. Corpulence, truth be told, can be iatrogenic, i.e. auxiliary to pharmacologic medicines, including a few antipsychotics, a few antidepressants, a few antiepileptic's, and steroids. A corpulence aggregate is likewise normal for certain maladies or conditions, including polycystic ovary disorder, Cushing's disorder, hypothyroidism, hypothalamic deformities, and development hormone lack. Then again, as an essential problem, corpulence actually has a tricky etiology. While its pathogenesis can be expressed in relatively simple thermodynamic terms. The excess of body fat storage because of a chronic positive energy balance (ie, surplus of energy intake vs. expenditure), the identification of the primary causes of the chronic energy imbalance remains challenging, while the metabolic, psychological, and behavioral phenotypes leading to "garden variety" obesity are still controversial. It is cleared that unnecessary energy admission (or hyperphagia) viewed as an undeniable aggregate of Obesity. Nevertheless, connecting hyperphagia to genuine weight gain has demonstrated especially troublesome, undoubtedly because it is innately testing to gauge energy consumption in free-living people. Different parts of food admission and their relationship to weight, for example, diet piece doubtlessly in light of the fact that it is naturally testing to gauge energy consumption in free-living people. Different parts of food admission and their relationship to Obesity, for example, diet structure energy thickness of food pace of supper utilization taste inclinations eating conduct style and sub-aggregates have likewise been investigated with conflicting outcomes.

The atomic science of Obesity is additionally just mostly perceived. This is likely because of the heterogeneity of "commonplace" weight and the way that it is caused, as other complex sicknesses, not by a solitary hereditary transformation but rather by numerous allelic deformities, which decide helplessness to natural elements. People who convey just one or a portion of these alleles may in any case not build up the sickness, since they either come up short on another allele (quality communication) or are not presented to the accelerating climate (quality climate connection). Moreover, there is dubious proof for an immediate relationship among genotypes and way of life or anatomical aggregates of weight.

OBESITY IN INDIA

In India, urbanization and modernization have great impact on obesity. In Northern India Obesity was generally predominant in metropolitan populaces (male = 5.5%, female = 12.6%), trailed by the metropolitan ghettos (male = 1.9%, female = 7.2%). Obesity rates were the most minimal in rustic populaces (male = 1.6%, female = 3.8%).13 Financial class likewise affected the pace of Obesity. Ladies of high financial class had paces of 10.4% instead of 0.9% in females of low financial class.

In spite of the fact that dreariness and mortality hazards are commonly higher for Obese individuals, the relationship with BMI, in the Obesity range, isn't really straight oruniform for sickness (i.e. malignancy). While in obese patients going throughhemodialysis or with cardiovascular breakdown and fringe vein ailment. Wellbeing results appear to be in a way that is better than for patients with typical weight. These perceptions have created the alleged "Obesity Survival Paradox". This paradox clarified by the way that patients get thinner as the fundamental sickness advances. Then again, this oddity has as of late been proposed as a possible clarification for two settled epidemiological observations.16 the U-formed (ie, sunken) connection among BMI and death rate, with the end goal that individuals with middle of the road BMI (25-30 kg/m2) will in general live longer than individuals with lower or higher BMIs6

REVIEW OF LITERATURE:

A review of literature is an essential aspect of research project that not only suggest existing knowledge of the inquired topic but also guide in proposed study.

Shammi Luhar (2020) has published their research article in title as forecasting the prevalence of overweight and obesity in India to 2040. The study aimed to forecasts of the future prevalence of overweight and obesity that can

help inform policy in India, the country where around one sixth of the world's population resides. Study finding mentioned that the prevalence of overweight and obesity will reach 30.5% (27.4%-34.4%) and 9.5% (5.4%- 13.3%) among men, and 27.4% (24.5%-30.6%) and 13.9% (10.1%-16.9%) among women, respectively, by 2040. The study concluded by mentioning that the overall prevalence of overweight and obesity is expected to increase considerably in India by 2040, with substantial increases particularly among rural residents and older Indians. Detailed predictions of excess weight are crucial in estimating future non-communicable disease burdens and their economic impact.

Meiqi Fan (2019) has published their research review article in titled as The Role of *Momordica charantia* in Resisting Obesity. Researcher reviewed the anti-obesity effects of various bioactive components of *M. charantia* established at the cellular and organismal level. The study aimed to provide links between various bioactive components of *M. charantia* and their anti-obesity mechanism. Researchers reviewed various database such as Google Scholar, Web of Science, ScienceDirect, ACS Publications, PubMed, Wiley Online Library, SciFinder, CNKI with the query TS = "*Momordica charantia*" and "obesity". Authors summarized the risks of excessive consumption of *M. charantia* and the application. Although further research is necessary to explore various issues, this review establishes the therapeutic potential of *M. charantia* and it is highly promising candidate for the development of anti-obesity health products and medicines.

Mahmood Qureshi (2017) has published their research article in title as Diuretic Activity of *Centella asiatica* (L.) Urban. In the study authors was evaluated for its diuretic activity by using metabolic cages for measuring urinary output after drug administration. The methanol extract of leaves and petioles of C. *asiatica* (L.) Urban plant was administered to Swiss albino mice, weighing between 22-28 g, in doses of 300 and 500 mg/kg body weight. Acute oral toxicity test was also conducted in animals to find out the safety of drug at high doses. The test compound was found to be safe up to 4g/kg body weight ~therefore it can be used freely as herbal medicine. Authors concluded that at both doses mild significant diuretic activity was observed and occurrence was dose and time dependent.

Md. Mahbubur Rahman (2017) published their research article with tiled as antinociceptive activity evaluation of *momordica charantia* l. Fruit methanolic extract. The study aimed to evaluate the antinociceptive activity of methanol extract of fruits of the of *momordica charantia. The study findings was* demonstrating that the extract antinociceptive activity at the highest dose was potent than aspirin at a dose of 200 mg per kg. based on findings the researchers divulged that fruits of the plant (*momordica charantia*) possess phytochemical constituent(s) with antinociceptive activities, and which can be of use in relieving pain.

Ali khairullah zahi (2015) published their research article in titled as acute and sub-acute dermal toxicity studies of *morinda citrifolia* l. Fruit extract in Sprague dawley rats. The study aimed to investigate the *in vivo* acute and sub-acute dermal toxicity of ethanolic extract of *morinda citrifolia* fruit extract at doses 2000 and 5000 mg/kg in acute and 500, 1000 and 2000 mg/kg body weight in rats. The study results mentioned that the extract at a single dose of 2000 and 5000 mg/kg of body weight did not produce treatment-related signs of toxicity or mortality in any of the animals tested during the 14-day observation period. In the repeated dose 28-day study, the application of 500, 1000 and 2000 mg/kg of body weight/day of fruit extract revealed no significant change ($p>0.05$) in bodyweight, hematological and biochemical parameters compared with the control group. Similarly, grosspathology and histopathology examinations of liver, spleen, kidneys, and skin did not reveal any morphological alteration. Authors revealed that close application of *morinda citrifolia* fruit extract did not deliver any critically dangerous impact in rats.

Hsin-Lun Huang (2015) published their research article in title as Noni (Morinda citrifolia L.) Fruit Extracts Improve Colon Microflora and Exert Anti Inflammatory Activities in Caco-2 Cells. Authors focused on the effects of fermented noni fruit extracts on colon microflora and inflammation of colon epithelial cells. The study results divulged the growth of Lactobacillus and Bifidobacterium species was promoted by ethanol extract. Ethyl acetate extract decreased intracellular reactive oxygen species and significantly suppressed COX-2, IL-8, and prostaglandin E2 production and neutrophil chemotaxis by suppressing the translocation of the p65 subunit. Quercetin was the main contributor to the anti-inflammatory activity. The fermented noni fruit promoted probiotic growths and down regulated the intracellular oxidation and inflammation in Caco-2 cells. Authors concluded that fermented noni fruit might protect against inflammatory diseases of the colon.

Muthu Santhoshkumar (2013) communicated their research article in title of antiulcerogenic effect of resin from *shorea robusta* gaertn. F. On experimentally induced ulcer models. The study conducted to understand anti-ulcer properties of *Shorea Robusta* Gaertn. F. The result of the study has shown that Pre-treatment with the resin (SRR) produced 62.69% inhibition of gastric mucosal damage in ethanol induced model and 64.55% inhibition in PL-

induced model which was comparable to the reference drug omeprazole. The protective effect was associated with normalization of antioxidant markers (superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione-S-transferase (GST) and lipid peroxidation (LPO)) in ethanol induced model. In PL rats, SRR showed significant (P<0.001) decrease in gastric juice volume (65.44%), free acidity (33.06%), total acidity (26.98%) pepsin (44.39%) and protein (23.82%) with subsequent increase in carbohydrate (22.67%) and mucin (41.46%) in gastric juice. Further, the pH of the gastric juice increased from 1.23 to 4.54. the study concluded by suggesting that *S. robusta* resin possess significant gastroprotective activity, supporting the folk use of resin preparations and contributing for its pharmacological validation.

Vasantharuba Seevaratnam (2012) published their research paper in titled as Functional Properties of *Centella Asiatica* (L.): A Review. Authors reviewed various database and suggested that Its potential antioxidant, antimicrobial, cytotoxic, neuroprotective and other activities have been widely claimed in many reports and basically is very much related to its properties and mechanism of action of the plant's bioactive constituents namely the triterpenic acid (asiatic acid madecassic acid), triterpenic saponin (madecassoside and asiaticoside), flavanoids and other phenolic compounds. Authors concluded with said that there are various heath beneficial functional properties of the *Centella* plant.

T A Wani (2012) published their research article in title of Anti-inflammatory and antipyretic activities of the ethanolic extract of *Shorea robusta* Gaertn. f. resin. The antipyretic activity of SRE was studied using Brewer's yeast-induced pyrexia in rats. Researcher divided the rats into five groups with five animals in each group. Group I was treated with vehicle i.e. 1% v/v Tween-80 and served as control. Groups II to IV were treated with three different doses of SRE (30, 100 and 300 mg/kg orally). Group V was treated with standard drug etoricoxib (10 mg/kg orally). The anti-inflammatory activity of SRE was assessed by per cent reduction in edema volume of carrageenan-induced hind paw edema and by per cent decrease in granuloma formation in cotton pellet-induced granuloma test. SRE (100 and 300 mg/kg) produced a significant reduction in edema volume and decrease in granulation tissue formation in rats. Significant reduction in pyrexia was observed at all the dose levels of SRE i.e. 30, 100 and 300 mg/kg. Study result concluded that SRE demonstrated anti-inflammatory and antipyretic activities of and supported its traditional therapeutic use in painful inflammatory conditions and fever.

CONCLUSIONS:

The purpose of this review was to view the literature related to anti-obesity activities of fruit extracts of medicinal plants. It is clear from the research reviewed that it is required to develop anti-obesity activities of fruit extracts of medicinal plants based knowledge on obese patients. It revealed that extensive research is needed to understand the benefits of fruit extracts of medicinal plants for obese patients.

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