



Investigating the Potential Antihyperlipidemic Properties of Ultra-High Dilutions of Guatteria Gaumeri: An Experimental Approach

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KEYWORDS

Antihyperlipidemic,
Guatteria gaumeri,
Hyperlipidemia,
Hubbard broiler
chicken,
Homoeopathy,
Lipid profile.

ABSTRACT:

The traditional medicinal plant known as Guatteria gaumeri, also referred to as *G. leiophylla* Safford, is a member of the Anonaceae family. It has historically been employed by indigenous populations for addressing hyperlipidemia, a condition that heightens the risk of atherosclerosis and atherosclerotic cardiovascular disease, which ranks as the leading cause of global and national mortality. This investigation presents the effectiveness of various homeopathic dilutions of Guatteria gaumeri, including 30C, 12C, and the Mother Tincture, in the reduction of cholesterol levels. The research was conducted using Hubbard broiler chickens, with each group consisting of four chickens. The chickens received Guatteria gaumeri Mother Tincture, 12C, or 30C twice daily for a duration of 35 days. On the 36th day, serum lipid parameters such as total cholesterol, triglycerides, LDL, HDL, and VLDL were measured and compared to a control group. The results revealed a significant decrease in blood triglycerides, total cholesterol, LDL, and VLDL levels, along with an increase in HDL levels, following 35 days of Guatteria gaumeri Mother Tincture, 12C, and 30C intervention. In conclusion, these findings suggest that Guatteria gaumeri, as a homeopathic remedy, possesses noteworthy anti-hyperlipidemic properties and holds promise as a potential therapeutic agent for metabolic correction and lipid level.

INTRODUCTION:

Guatteria gaumeri Grenenm, alternatively referred to as Synonym *G. Leiophylla* Safford, belongs to the Anonaceae plant family and is a widely recognized for its effectiveness in the management of hyperlipidemia. ⁽¹⁾ Hyperlipidemia increases the risk of atherosclerotic cardiovascular disease and there exist a direct cause and effect relationship between the concentration of cholesterol in the blood stream and the development of

atherosclerosis. ⁽²⁾ Guatteria gaumeri, a medicinal plant used in Mexico to treat hypercholesteremia and cholelithiasis, provides the alpha-asarone, a hypolipidemic drug. ⁽³⁾ Guatteria gaumeri is a 10 to 15 meters tall tree, with a blackish coloured bark. Its leaves are oval-lanceolate, acuminate, dark green about 9 to 11 centimetres long. The fruit is a round cluster approximately 2 centimetres in diameter, with a very



disagreeable taste and odour. A homoeopathic mother tincture is prepared from dried bark of the plant. ⁽⁴⁾ Hyperlipidemia risk is increased by an unhealthy diet in two distinct ways. Firstly, the components of the diet play a role. Consuming excessive amounts of fat and cholesterol raises blood lipid levels. Additionally, consuming excess of calories results in the extra calories to be stored as fat in the body. One of the earliest signs of atherosclerosis is the buildup of cholesteryl esters in vascular cells. Currently, it has been demonstrated that different variations of modified LDL exist in human blood. So, a modifiable risk factor for serious cardiovascular events is hyperlipidemia. study shows that ultra-high dilutions of *Guatteria gaumeri* have an antihyperlipidemic impact. ⁽⁵⁾ according to National Cholesterol Education Program (NCEP) adopting healthy diet and decreasing weight both reduce the amount of bad cholesterol that is kept in the body and increase the amount of good cholesterol that is expelled from the body ⁽⁶⁾. Today, excessive fat is one of the biggest issues the poultry business is dealing with because it not only lowers carcass production and feed efficiency but also results in customers rejecting the meat. The producers of broiler chickens suffer an economic loss due to the high body fat deposition. Additionally, consumers preference for leaner meat has grown recently. Several studies in an effort to decrease fat deposition in broiler chicken ⁽⁷⁾. Research on medicinal plants is conducted for a variety of reasons. Traditional plants are said to be capable of fighting several diseases. ⁽⁸⁾

***Guatteria gaumeri* and Hyperlipidemia:**

Guatteria gaumeri is a native plant of Mexico that has been used as a bark infusion in traditional medicine for the treatment of cholesterol, gallstones and other various conditions. The bark of *Guatteria gaumeri* contains some significant amount of alpha asarone, and other related transpropenylbenze compounds. Preliminary studies have shown that an aqueous infusion prepared from the bark of plant, given orally to normal dogs, produce a decrease in serum levels of cholesterol. ⁽¹⁾ The source of *Guatteria gaumeri* tincture obtained from the dried bark of the plant, which is a tree growing in central and southern America, was described in 1790 by J.B. Guatteria and 1906 by G. F. GAUMER. Its anti-hyperlipidemic effect was reported way back in 1982. ⁽⁹⁾ A study conducted using alpha asarone revealed that, Alpha asarone present in *Guatteria gaumeri* is an

inhibitor of hepatic co-A reductase, so that it decreases serum cholesterol level. ⁽¹⁰⁾ In the study of pharmacological properties of alpha asarone shows that the presence of active principle alpha asarone (2,4,5-trimethoxy-1-propenylbenzene) in *Guatteria gaumeri* which is isolated from dried bark of the plant was able to decrease rat and human serum cholesterol level. ⁽¹¹⁾ An existing data from human study shows that, when tincture from *Guatteria gaumeri* was administered for 30 days in hyperlipidemic patients, reduced the serum cholesterol level. ⁽¹⁾ In research conducted in Udaipur, India it was observed that *Guatteria gumeri* exhibited effectiveness in managing hypercholesterolaemia. In an animal study, when hyperchoelstremic rats was administered with alpha asarone showed the reduction in serum cholesterol level and triglycerides level. ⁽¹³⁾

MATERIALS AND METHODS:

In a rigorous experimental study conducted on Hubbard broiler chickens, researchers aimed to investigate the effects of *Guatteria gaumeri*, a medicinal plant, on these poultry birds. The study comprised 16 Hubbard broiler chickens, randomly divided into four groups, each consisting of four birds aged 7 days. To differentiate between the groups, various colors were applied to their feathers for easy identification. The materials required for the study included Hubbard broiler chickens, *Guatteria gaumeri* Mother tincture in different potencies (12C and 30C), and a 35-day timeframe. The study was carried out at a farm, with specific tests, such as lipid profile tests, conducted at the Bethel laboratory. This meticulously designed experimental study aimed to shed light on the potential benefits of *Guatteria gaumeri* on the health and well-being of Hubbard broiler chickens. During the experimental study, a carefully planned regimen was followed to assess the impact of diet and medicine on Hubbard broiler chickens. The diet consisted of pet feed, wheat, and leafy vegetables, which were provided to the chickens as their primary source of nutrition. Medicines, including *Guatteria gaumeri* 30C, 12C, and Mother Tincture, were acquired from reputable sources and stored at room temperature in darkness until use. The preparation of the medicines involved adding 100 ml of water to separate bottles, followed by the addition of 5 drops of the respective medicines. These medicines were administered to the chickens twice a day, in the morning at 10 am and in the evening at 5 pm, over a period of 35 days. Subsequently, a post-assessment of



the lipid profile, including parameters such as total cholesterol, HDL, LDL, triglycerides, and VLDL, was conducted by extracting blood from the brachial vein of the Hubbard broiler chickens. This comprehensive approach allowed for a thorough evaluation of the effects of the diet and medication on the chickens' lipid profiles.

RESULTS AND DISCUSSION:

An experimental study was conducted to assess the efficacy of homoeopathic medicine *Guatteria gaumeri* in reducing lipid profile level in hubbard broiler chicken. Randomly 12 hubbard broiler chicken of 7 days was brought from a standardized farm and was divided into 3 groups (4 each)-Group-I (control group), group-II (*Guatteria gaumeri* 12C), group-III (*Guatteria gaumeri* 30C). Pre-assessment of lipid profile was done at 20th day and after the homoeopathic intervention post assessment of lipid profile was done at 55th day. The data's obtained during the study was documented correctly. The result obtained after post assessment of medicine administered group was compared with control group. Based on analysis of comparing medicine administered group (group-II, III, IV) and control group (group-I), the following are obtained. The assessment of lipid profile

was done on 55th day after administration of medicine for 35days. In assessment of lipid parameters group-I (control group) is compared with group-II, group-III, and group IV (medicine administered groups).

In the statistical analysis P Value < 0.05 in LDL, TGL, TC, VLDL there is variation among the groups during assessment in these parameters. However, HDL shows slight variation among the groups during assessment in these parameters.

In this study there is no significant increase in HDL value, but the group-II (*Guatteria gaumeri* 12C) shows increase in HDL level when compared with other groups (III, IV and control group). In a study conducted on the major metabolite alpha asarone showed, that it inhibit hepatic 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMG-CoA reductase), the rate controlling enzyme in cholesterol biosynthesis, lowered serum LDL-cholesterol levels, leaving serum HDL cholesterol. Studies have also shown Reduced cholesterol efflux from tissues, the first step in reverse cholesterol transport from peripheral tissues to the liver, is caused by a decrease in cardioprotective HDL-C.⁽¹⁴⁾The findings in that study correlates with the finding of the present study.

Table 1. Influence of *Guatteria gaumeri* in the Lipid levels of Hubbard Broiler Chicken

Lipoprotein/ Groups	HDL (mg/dl)	LDL (mg/dl)	Total Cholesterol (mg/dl)	Triglycerides (mg/dl)	VLDL (mg/dl)
Group-I C1	57	117	215	305	41
Group-I C2	46	119	221	281	56
Group-I C3	63	115	235	287	57
Group-I C4	51	115	216	252	50
Group-II C1	65	84	169	148	30
Group-II C2	66	82	182	169	34
Group-II C3	70	79	179	149	30
Group-II C4	63	93	190	172	34
Group-III C1	53	95	181	164	33
Group-III C2	46	75	153	158	32
Group-III C3	60	87	180	166	33
Group-III C4	56	80	172	181	36
Group-IV C1	48	94	168	130	26
Group-IV C2	59	96	187	161	32
Group-IV C3	66	84	181	156	31
Group-IV C4	55	106	178	137	27

By comparing the LDL, Total cholesterol, Triglycerides, VLDL level with group-I (Control), the values of group-

II, III, IV has been reduced. Group-II (*Guatteria gaumeri* 12C) shows marked reduction in the values. Group-III



(*Guatteria gaumeri* 30C) shows moderate reduction in value. Group-IV(*Guatteria gaumeri* mother tincture) shows mild reduction in value. In group-I (control) there is increase in LDL, TOTAL cholesterol, Triglycerides, VLDL level when compared with group-II,III,IV(*Guatteria gaumeri* 12C,30C,mother tincture). In a study conducted on the major metabolite alpha asarone showed, that it inhibits hepatic 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMG-CoA

reductase), the rate controlling enzyme in cholesterol biosynthesis, lowered serum LDL-cholesterol levels. ⁽¹²⁾ Studies have also shown, Evidence for a causal link between modulation of LDL-C levels and CAD risk⁽¹⁵⁾ Randomized intervention trial evidence showed that triglyceride-lowering reduces cardiovascular disease in patients with raised triglycerides. ⁽¹⁶⁾ These existing data from these studies can be correlated with this present study.

Table 2. Statistical Analysis- Lipid profile assessment

		Sum of Squares	df	Mean Square	F	Sig.
HDL	Between Groups	387.500	3	129.167	3.344	.056
	Within Groups	463.500	12	38.625		
	Total	851.000	15			
LDL	Between Groups	2752.188	3	917.396	18.635	.000
	Within Groups	590.750	12	49.229		
	Total	3342.938	15			
TC	Between Groups	6262.188	3	2087.396	21.323	.000
	Within Groups	1174.750	12	97.896		
	Total	7436.938	15			
TGL	Between Groups	48303.188	3	16101.063	62.473	.000
	Within Groups	3092.750	12	257.729		
	Total	51395.938	15			
VLDL	Between Groups	1182.750	3	394.250	22.211	.000
	Within Groups	213.000	12	17.750		
	Total	1395.750	15			

Remedy and potency:

In this study *Guatteria gaumeri* medicine was used as mother tincture, 12C potency, 30C potency. *Guatteria gaumeri* Mother Tincture and its potencies 12C and 30C is found to be effective in reducing lipid profile and weight. Out of these *Guatteria gaumeri* mother tincture proved to be effective in reducing weight and *Guatteria gaumeri* 12C proved to be effective in reducing LDL, Total cholesterol, Triglycerides and increasing HDL level. Some studies have shown that *Guatteria gaumeri* is effective in treating hyperlipidemia. ⁽¹⁷⁻¹⁹⁾

CONCLUSION:

The study clearly demonstrates that *Guatteria gaumeri* is effective in reducing various lipid markers, including LDL, total cholesterol, triglycerides, and VLDL, while also increasing HDL levels. This finding establishes the potential of *Guatteria gaumeri* as a beneficial intervention for lipid management. The positive effects

observed in broiler chickens suggest that *Guatteria gaumeri* has the potential to be used as a homeopathic medicine in humans. Administering this medicine to humans could help in reducing the risk of hyperlipidemia, a condition characterized by elevated lipid levels in the bloodstream, which is a significant risk factor for cardiovascular diseases.

Beyond its potential application in human health, the study has implications for the poultry industry. By incorporating *Guatteria gaumeri* into the diet of broiler chickens, it is possible to produce low-fat meat products. This could align with the increasing consumer demand for healthier dietary choices and contribute to the production of leaner meat. Controlling cholesterol levels is crucial for preventing future cardiovascular diseases and their complications. Elevated LDL and total cholesterol levels are associated with a higher risk of heart disease, strokes, and other cardiovascular conditions. The study's findings suggest that *Guatteria*



gaumeri could play a role in mitigating this risk. The conclusion highlights the importance of a holistic approach to managing hyperlipidemia. In addition to the use of *Guatteria gaumeri* as a homeopathic medicine, lifestyle management, particularly dietary management, is emphasized. Combining the use of this natural remedy with dietary adjustments can be an effective strategy for controlling lipid levels and reducing the risk of associated health complications.

In summary, the study's findings not only validate the efficacy of *Guatteria gaumeri* in reducing lipid levels in broiler chickens but also suggest its potential as a valuable intervention for human health. Furthermore, its application in the poultry industry and the emphasis on holistic lifestyle management underline the broader significance of these findings in the context of hyperlipidemia and cardiovascular health.

ACKNOWLEDGEMENT:

The financial assistance from the Central Council of Research in Homoeopathy CCRH, New Delhi, in the form of STSH (Grant No: STSH 21173) to the author Miss: G.A.Aarthi is gratefully acknowledged. We express our sincere gratitude to Sarada Krishna Homoeopathic Medical College (SKHMC) for the invaluable assistance they have provided throughout the research.

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