

Formulation and Evaluation of Antidiabetic Suspension of Aegle Marmelos Leaves

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Abstract: *The study was focused mainly on the preparation of beal powder loaded antidiabetic suspension. Bael leaves Aegle marmelos belonging to family Rutaceae, is commonly known as Bael. The plant has Antibacterial Activity, Anti-diabetic Activity, Analgesic and Antiinflammatory activity. These suspension was evaluated for various properties such as organoleptic characteristics, Herbal medicine is the oldest form of healthcare known to humanity. Herbs had been used by all culture all over history. The in this aeglemarmelos suspension shows antidiabetic activity and in this the organoleptic character, sedimentation value, pH value were studied.*

Keywords: Aegle marmelos

I. INTRODUCTION

Herbal drugs play an important role in the development of influential therapeutic agents. Earlier human beings started their studies on diseases and its treatments, but there was no evidence found that people have prehistoric use of artificial means synthetic medicines for their sickness. Plant medicines are readily used in combination rather than in a single form to acquire maximum benefit from their combined potential to reduce side effects of one another. Keeping the above information in view, an indigenous polyherbal preparation was developed. Diabetes mellitus develops due to obesity which is also an rising problem worldwide, induces atherosclerosis and other metabolic syndromes like heart diseases, stroke and other health related problems. According to the provisions of insulin DM was classified into two main categories insulin dependent diabetes mellitus (Type 1), and non-insulin dependent diabetes mellitus (Type 2). Research desires in the field of herbal medicines are huge; the identification of active compounds from the plants source is still remaining a challenge. So, there should be research-based authentication on either whole herbs or on extracted compounds are found to be superior. The issue of herb-herb and herb-drug interactions is also an important, which requires increased awareness and study, as in polypharmacy and polyherbacy.

Today, there is a vital need to develop safer drugs for the treatment of various disorders. As a result, there is an emergent interest in the pharmacological evaluation of various plants used in traditional systems of medicine Diabetes mellitus According to International Diabetes Federation's (IDF) estimates, 80% of the world diabetic population will be from low- to middle-income countries in 2030. As per IDF 2011 report, China, India, and the United States of America have a diabetic population of 90.0, 61.3, and 23.7 million, which may be increased up to 129.7, 101.2, and 29.3 million, respectively, in 2030. Diabetes Mellitus (DM) is a metabolic disorder associated by impairment in the metabolism of carbohydrate, fat and proteins which was recognized by insufficient insulin secretion or rising resistance to its action.

II. MATERIAL AND METHOD:

The leaves of bael (AEGLE MARMELOS) collected and converted into crude drug powder



CHEMICAL TEST:

FORMULATION TABLE:

PHYTOCHEMICAL	PETROLEUM ETHER	CHLOROFORM	METHANOL	Aq. SOLUTION
FLAVONOID	-	+	-	-
PHENOL	+	-	-	+
STEROL	+	+	+	-
ANTHOCYANIN	-	+	+	+
XANTHOPROTEIN	-	-	-	-

ingredients	Quantity			uses
	Batch1	Batch2	Batch 3	
HPMC	1mg	1.5mg	2mg	Suspending agent
Acacia , Tragacanth	1mg	-	-	Suspending agent
Methyl paraben	0.5mg	1mg	1.5mg	preservative
Glycerin	1ml	2ml	3ml	Lubricant and humectant
Diluted water	qs	qs	qs	To adjust the volume

III. METHOD OF PREPARATION

DISPERSION METHOD

- A suspension is prepared on the small scale by grinding or levigating the insoluble material in the mortar to a smooth paste with a vehicle containing the dispersion stabilizer and gradually adding the remainder of the liquid phase in which any soluble drugs may be dissolved.
- The slurry is transferred to a graduate, the mortar is rinsed with successive portions of the vehicle, and the Dispersion is finally brought to the final volume.
- On a large scale, dispersion of solids in liquids is accomplished by the use of colloid mills. Dough mixers, pony mixers, and similar apparatus are also employed.

Preparation of Suspensions

Reduce drug powder to desired size.

Add drug and wetting agent to solution.

Prepare solution of suspending agent.

Add other ingredients.

Homogenize medium.

Package.

EVALUATION PARAMETER:

A) Physical appearances

1) colour: greenish

2) odour: aroma

3) taste: sweet

B) pH value:

pH of the phases of suspension also contribute to the stability and characteristics of formulations.

So pH of the different vehicles, phases of suspension before mixing and after mixing are monitored and recorded time to time to ensure optimum pH environment

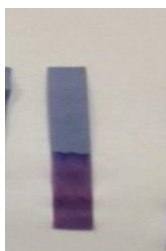
Dip a pH paper into sample of suspension

Observe the colour change in pH paper.

Red pH paper turn blue indicate the alkaline solution

C) Sedimentation value :

Sedimentation volume is a rate of the ultimate volume of sediment to the original volume of sediment before settling.



$$F = V_u/V_o$$

Where, • V_u = final volume of sediment V_o original volume for suspension before settling

A) Acacia sedimentation volume

$V_u = 30\text{ml}$ $V_o = 5\text{ml}$ Then, $F = 6$

B) Tragacanth sedimentation volume

$V_u = 40\text{ml}$ $V_o = 20\text{ml}$ Then, $F = 2$

C) HPMC Sedimentation rate

$V_u = 35\text{ml}$ $V_o = 2.5\text{ml}$ Then, $F = 14$



IV. CONCLUSION

The present study was focused mainly on the preparation of herbal antidiabetic suspension. The plant used for its Antibacterial Activity, . The in vitro studies for the formulation can be Physical test of herbal suspension, the sedimentation value value, pH value, physical parameters are studied.

REFERENCES

- [1]. S .Monika ,M Thiruwal,PR Kumar <https://www.dabur.com/ayurveda/ayurvedic-medicinal-plants/bael#:~:text=Aegle%20Marmelos%20leaf%20juice%20with,to%20low%20blood%20sugar%20levels>.
- [2]. Shubhasrivasta,prabhutta panda, navneetverma https://www.researchgate.net/publication/322950856_FORMULATION_AND_STABILITY_STUDIES_OF_HERBAL_SUSPENSION_OF_AGARICS_BISPORUS_POWDER
- [3]. Dipak Suresh thorath https://www.researchgate.net/publication/364164171_Formulation_and_Characterization_of_Herbal_Antidiabetic_Suspension
- [4]. Tammy sarkar, mollasalaudinn,runuchakraborty pharmacological and nutritional properties of AEGLE marmelos <https://www.sciencedirect.com/science/article/pii/S2666154320300624>
- [5]. S chaudhari, AEGLE MARMELOS LEAVES used as a suspension <https://www.phcogj.com/sites/default/files/PharmacognJ-11-2-240>.
- [6]. Evaluation methods of suspension <https://gpatindia.com/evaluation-methods-of-suspensions-ip-suspensions-and-mcqs-for-gpat-niper-pharmacist-and-drug-inspector-exam/>
- [7]. Formulation and evaluation of suspension https://applications.emro.who.int/imemrf/Pak_J_Pharm_Sci/Pak_J_Pharm_Sci_2014_27_4_917_923
- [8]. G.R vaneja,kothaanilkumar,Azadrajaram [https://www.sciencedirect.com/science/article/pii/S0975947616304089#:~:text=Aegle%20marmelos%20\(Bilva\)%20is%20being,is%20associated%20with%20sustainability%20concerns](https://www.sciencedirect.com/science/article/pii/S0975947616304089#:~:text=Aegle%20marmelos%20(Bilva)%20is%20being,is%20associated%20with%20sustainability%20concerns).
- [9]. N P Atul,V.D. ganesh https://www.researchgate.net/publication/292739276_A_review_on_Aegle_marmelos_a_potential_medicinal_tree
- [10]. Pushpendra Kumar Patel,Jyotishahu https://www.researchgate.net/publication/323512546_Aegle_marmelos_A_Review_on_its_Medicinal_Properties