

## Antidiabetic evaluation of bioflavonoid nanoparticles selection technique by using the analytic hierarchy process

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### ABSTRACT

The aim of this study was to a choice most exceptional technique for the development of antidiabetic nanoparticles encompass natural polymer particles using the Analytic Hierarchy Process (AHP). In our method of selection may be lead to waste of time, loss of products and financial resources. Based on the above reasons, AHP has employed to discover the appropriate method. In the AHP, a special hierarchy was built with a goal for alternatives. After constructing the AHP, the expert select software was used to calculate the overall priority of criteria, sub-criteria and options. The best alternative selected was founded on the highest priority. Based on the Nanoscale to formulate and evaluate antidiabetic nanoparticles encompasses natural polymer particles, and it shows the particle size Polydispersity Index and zeta potential were within acceptable limits. Drug content and entrapment efficiencies were 94.16% and 86.14%, respectively. Our study concludes that AHP was the feasible and real tool for choosing the most suitable method for the formulation and evaluation of antidiabetic nanoparticles.

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### INTRODUCTION

it is entrancing and testing the universe of science and innovation because of their astonishing job in creating novel shapes, structures and the strange marvels related to these materials. [1] London based most prominent nanotechnology consultancy organization detailed the improvement of nano-based medication move use was \$3.4 billion out of 2007 and roughly \$26 billion out of 2012 and in 2015 it is relied upon to be 220\$. [2] The science and

innovation research in nanotechnology guarantees forward leaps in the regions incorporate assembling, medication and human services, nanopharmaceuticals, biotechnology, nanoelectronics, data innovation and National security. [3] The expression "nanopharmaceuticals" covers sedate disclosure, plan, advancement and conveyance of medication. In pharmaceutical detailing improvement, 90% of the dynamic fixings exist as energetic particles. [4] Through the progress in nanotechnology, it might create the medication stacked nanoparticles that can be utilized in various novel applications. Nano pharmaceutical is a promising way to deal with convey the medication into cerebrum for neurodegenerative disorders. [5] Parkinson's illness (PD) is the second most predominant degenerative issue of the grown-up beginning, after Alzheimer's sickness and influencing 1-2% of an all-inclusive community. Rasagiline (N propargyl 1 R amino in an) mesylate (RM) is the second era of propargylamine utilized for the treatment of PD. [6] RM is a novel irreversible monoamine oxidase type B

**Table 1: The 9 point scale for pairwise comparisons**

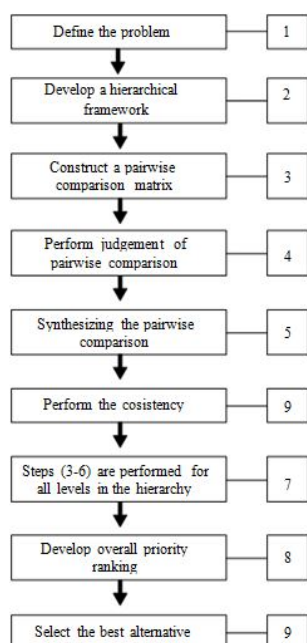
S.No	Definition	Explanation
1	Equal importance	Two elements contribute identically to the objective
3	Weak dominance	Experience or judgement slightly favours one element over another
5	Strong dominance	Experience or judgement strongly favours one element over another
7	Demonstrated dominance	An element's dominance is demonstrated in practice
9	Absolute dominance	The evidence favouring an element over another is affirmed to the highest possible order
2,4,6,8	Intermediate values	Further subdivision or compromise is needed

inhibitor, optional cyclic benzylamine and indane subordinate of antiparkinson drug. [7] Delivery of RM into mind is an immense test on account of one of a kind property of blood cerebrum hindrance. Nano pharmaceutical has given a powerful method to beat this trouble and used to limit the medication debasement upon organization, upgrade the bioavailability and in vivo proficiency of numerous medications, increment the explicitness towards the cell, improved the steadiness of delicate operators, increment the objective effectiveness and to control the arrival of the drug. [2, 8] The creation of nanoscale strong lipid particles included a wide assortment of procedures, for example, high weight homogenization, microemulsion, dissolvable emulsification, double emulsion and dissolvable infusion technique with different degrees of value, time, and cost. The challenges related to the choice of fitting technique for the improvement of nanoscale strong lipid particles are a pivotal choice in the pharmaceutical definitions. Since, the choice of a wrong strategy may cause loss of material assets, time of examination and its spiralling expenses take steps to make novel medication improvements are progressively unreasonably expensive to both pharmaceutical creating organizations and consumers. [9] However, these issues can be essentially overwhelmed by applying the explanatory Chain of command process (AHP) and is presented as a multi rules dynamic by Thomas L Saaty in the 1970s. [10] This compensatory choice technique can be executed in the territories of arranging, distributing assets, settling clashes, choosing the suitable other option, all-out quality administration, technique enhancement, key promoting, assessing the ventures (horticulture, financial matters, transport, medication, pharmaceuticals and money divisions) thus forth. [11] AHP have preferences incorporates expanding the item quality and abbreviate the item advancement cycles. [12] AHP envelops the accompanying advances: (a) Structuring of the various levelled choice issue. (b)

Judgments network got dependent on the pairwise correlation among standards and alternative. (c) Consistency test must continue until palatable (d) Synthesizing examinations across different levels to get the last loads of other options. [13] In this investigation, a suitable technique for the readiness of RM stacked strong lipid particles was chosen by utilizing the AHP. [12, 14, 15] In this examination, the AHP is made out of four levels. Level 1 comprises of the objective of the decision of for choosing the most appropriate strategy for the manufacture of medication stacked nanoparticles. Level 2 contains four principle measures, in particular operational execution, apparatus data, process yield and creation cost. Level 3 includes eleven sub-rules, it speaks to various forces of the measure. Level 4 comprises five other options; these can be utilized to arrive at the objective.

The judgment on pairwise correlations of the AHP is completed by utilizing Saaty's discrete nine worth scale technique. This examination comprised a goal to choose the most suitable strategy between five other options, to be specific the double emulsion, dissolvable emulsification/dissipation, high weight homogenization, microemulsion and dissolvable infusion technique. High weight homogenization is a dependable and incredible strategy, utilized for the arrangement of strong lipid nanoparticles (SLN). Quickly, the strong lipid (glyceryl monostearate, palmitic corrosive and stearic corrosive) and medication are warmed over the dissolving purpose of the fat. A watery stage containing surfactant is included drop by drop into the liquefied lipid under fast mixing to make the emulsion. Microemulsion procedure Microemulsion strategy is a straightforward technique used to get ready SLN, which was first presented by Gasco. [16] Microemulsions are clear, thermodynamically steady, and probability to consolidate both hydrophilic as well as lipophilic medications. In this technique, the medication is included in dissolved lipid (stearic corrosive and

palmitic corrosive).



**Figure 1: Hierarchy Process**

The watery stage containing surfactant (polyethylene polypropylene glycol) and co-surfactant (polysorbate 80) is included drop astute into the lipid stage, under attractive animating to get a reasonable microemulsion. The warm o/w clear emulsion is scattered into cold refined water under test sonicator to harden the nanoparticles. [17, 18] Solvent emulsification/dissipation Solid lipid nanoparticles are likewise manufactured dependent on the emulsification dissolvable dispersion procedure. In this strategy, the medication and picked lipid is disintegrated in water-immiscible natural dissolvable (cyclohexane, chloroform, and dichloromethane), which is then emulsified in a watery arrangement containing stabilizer under blending. At that point, the natural dissolvable vanished under high tension homogenizer and decreased weight. The SLN got by the precipitation of lipid in a watery stage. The most significant bit of leeway of this strategy is shirking of any warm worry during the creation. [19, 20] Double emulsion method is principally utilized for hydrophilic medications, the embodied hydrophilic medication with stabilizer to forestall sedate detachment to the outside watery stage during dissipation in the outer

fluid period of w/o/w double emulsion. Quickly, the medication is broken up in a watery arrangement, which is then emulsified in a fluid stage containing stabilizer under mixing. The got pre-emulsion is scattered into a watery stage containing hydrophilic emulsifier under mixing and bringing about development twofold emulsion SLN. [21] Solvent infusion strategy is a novel way to deal with define SLN, and the arrangement dependent on precipitation from the broke down lipid in the arrangement. In this strategy, the strong lipid is disintegrated in the fluid miscible/immiscible natural dissolvable (ethanol, CH<sub>3</sub>)<sub>2</sub>CO, isopropanol), which is infused through an infusion into a watery stage containing with or without surfactant under mixing. The abundance lipid is sifted through channel paper. The watery stage containing an emulsifier assists with shaping lipid beads at the site of infusion and balance out SLN until dissolvable scattering is finished by diminishing the surface strain among water and solvent [22]. We tend to establish that the nanoprecipitation strategy has the most elevated need loads as looked at amid the rest of ways and materials severally.

$$w_i = \frac{1}{n} \sum_{j=1}^n \frac{a_{ij}}{\sum_i^n a_{ij}}, i, j = 1, 2, \dots, n$$

## MATERIALS & METHODS

Long last, in the amalgamation of need stage, every correlation framework is then settled by an elaborate course for technique and progression to determine the model's significance and elective execution. These standards could be explained by organizing them in an all the more including nine stages process as appeared in looking at the option for every criterion agreeing on the course for the direction of state's scale, this-closes in the making of the matched way assessment medium.

Lastly, in the synthesis of the priority stage, each comparison matrix is then solved by an intricate route for method and route for control the criteria importance & alternative performance. These principles could be elaborated by structuring them in a more encompassing nine steps process as shown in Figure1

### Comparing Option for Every Criterion

Rendering the route for the guidance of Saaty's scale,

**Table 2: Criteria for the Nanoparticles preparation**

S. No	Criteria	Abbreviation/Code
1	Availability of instruments	MCR01
2	Operational tediousness	MCR02
3	Results reproducibility	MCR03
4	Process simplicity	MCR04
5	Economical	MCR05

**Table 3: Options for the preparation of Nanoparticles**

S. No	Options	Abbreviation/Code
1	Ionic gelation method	SCR01
2	Nano spray drying method	SCR02
3	Nanoprecipitation technique	SCR03
4	Dialysis method	SCR04
5	Supercritical fluid method	SCR05

**Table 4: Criteria for the polymer selection**

S.No	Criteria	Abbreviation/Code
1	Dependability	CRT01
2	Physio-chemical nature	CRT02
3	Price of material	CRT03
4	Availability of material	CRT04

**Table 5: Polymer options for selection**

S. No	Options	Abbreviation/Code
1	Chitosan	PLR01
2	Gum Ghatti	PLR02
3	Eudragit polymers	PLR03

**Table 6: Criteria amid respect to Goal (Selection of excipients & suitable method for Nanoparticle preparation)**

	MCR01	MCR02	MCR03	MCR04	MCR05	Eigen Vector	Weight	Comp Eigen Vector
MCR01	1/2	1/2	1/2	3/2	4/2	1.251	0.206	1.069
MCR02	1/2	1	4/2	5	1/2	1.821	0.3027	2.541
MCR03	1/2	1/4	1/2	9/2	7	1.999	0.335	2.125
MCR04	1/3	1/5	1/9	1	8	0.5681	0.0954	0.773
MCR05	1/4	2	1/7	1/8	1	0.3891	0.0637	0.788

**Table 7: Options amid respect to Availability of instruments**

	SCR01	SCR02	SCR03	SCR04	SCR05	Eigen Vector	Weight	Comp Eigen Vector
SCR01	1/2	4/2	1	1	2	1.517	0.265	1.808
SCR02	1/4	1/2	4	2	3	1.431	0.249	1.938
SCR03	1/2	$\frac{1}{4}$	1	9	6	1.689	0.295	2.226
SCR04	1/2	$\frac{1}{2}$	1/9	1	6	0.807	0.69	0.914
SCR05	1/2	1/3	1/6	1/6	1	0.34	0.051	0.347

**Table 8: Options amid respect to Operational tediousness**

	SCR01	SCR02	SCR03	SCR04	SCR05	Eigen Vector	Weight	Comp Eigen Vector
SCR01	1/4	4	1/4	1	1/3	1.39	0.24	2.594
SCR02	1/4	1	4	4	4	1.75	0.30	2.14
SCR03	1/4	1/4	1	8	9	1.35	0.23	2.091
SCR04	1	1/4	1/8	1	8	0.75	0.64	1.057
SCR05	3	1/4	1/9	1/8	1	0.401	0.07	0.933

**Table 9: Options amid respect to Results reproducibility**

	SCR01	SCR02	SCR03	SCR04	SCR05	Eigen Vector	Weight	Comp Eigen Vector
SCR01	1/4	3	3	3	1/4	1.465	0.260	2.302
SCR02	1/3	1	1	1/3	8	0.976	0.173	1.67
SCR03	1/3	1	1	4	9	1.643	0.292	1.968
SCR04	1/3	3	1/4	1	9	1.176	0.209	1.468
SCR05	1/4	1/8	1/9	1/9	1/4	0.361	0.064	1.184

**Table 10: Options amid respect to Process simplicity**

	SCR01	SCR02	SCR03	SCR04	SCR05	Eigen Vector	Weight	Comp Eigen Vector
SCR01	1/4	4	1	1/4	2	1.741	0.291	1.956
SCR02	1/4	1	4	3	3	1.551	0.259	1.951
SCR03	1	$\frac{1}{4}$	1	5	9	1.622	0.27	1.716
SCR04	1/2	1/3	1/5	1	8	0.767	0.128	0.812
SCR05	1/2	1/3	1/9	1/8	1	0.297	0.049	0.327

**Table 11: Options amid respect to Economical**

	SCR01	SCR02	SCR03	SCR04	SCR05	Eigen Vector	Weight	Comp Eigen Vector
SCR01	1/4	5	1/2	1/4	1/4	2.09	0.337	2.156
SCR02	1/5	1	5	4	1	1.319	0.212	2.224
SCR03	2	1/5	1	6	9	1.84	0.298	2.076
SCR04	1/4	1/4	1/6	1	9	0.62	0.100	0.74
SCR05	1/4	1	1/9	1/9	1	0.31	0.050	0.392

**Table 12: Final Priority for nanoprecipitation method**

S.No	Preparation method	Priority
1	Ionic gelation method	0.264
2	Nano spray drying method	0.240
3	Nano precipitation technique	0.274
4	Dialysis method	0.157
5	Supercritical fluid method	0.063

**Table 13: Criteria amid respect to Goal (Selection of Excipient)**

	CRT01	CRT02	CRT03	CRT04	Eigen Vector	Weight	Comparison Eigenvector
<b>CRT01</b>	1/4	2	3	1/4	1.15	0.32	1.7
<b>CRT02</b>	1/4	1	5	8	2.11	0.43	2.04
<b>CRT03</b>	1/3	1/5	1	7	0.82	0.16	0.88
<b>CRT04</b>	1	1/8	1/7	1	0.36	0.075	0.47

**Table 14: Option amid respect to Dependability**

	PLR01	PLR02	PLR03	Eigen Vector	Weight	Comparison Eigenvector
<b>PLR01</b>	1/4	1/2	1/4	1.0	0.24	0.76
<b>PLR02</b>	2	1	9	2.6	0.65	2.01
<b>PLR03</b>	1/2	1/9	1	0.38	0.09	0.29

**Table 15: Options amid respect to Physio-chemical nature**

	PLR01	PLR02	PLR03	Eigen Vector	Weight	Comparison Eigenvector
<b>PLR01</b>	1/4	2	1/4	1.25	0.37	1.47
<b>PLR02</b>	$\frac{1}{2}$	1	8	1.58	0.47	1.85
<b>PLR03</b>	1	1/8	1	0.5	0.14	0.58

this- ends in the creation of the paired-manner evaluation medium.

CR was carried out for paired manner judgment as a tag on

$$CI = (\lambda_{max} - n)/(n - 1)$$

#### Advantages of Using AHP

Advantages of using the AHP is as follows

1. It for that analyses & renders systematic what is largely a subjective decision process & result facilitates judgements;
2. As a by-product of the method, decision-makers receive inform that relation about the implicit weights that are placed on the evaluation criteria; &
3. The use of computers makes it possible to conduct a sensitivity analysis of the results.

Another advantage of using AHP is that it results in better communication, leading the route for a clear understanding & consensus among members of decision-making groups so that they are likely the route for the alternatives selected AHP also can route for identifying & take in the consideration for the decision maker's inconsistencies. Decision-makers are rarely consistent in their judgements amid respect the route for qualitative aspects. The AHP method co-operates such inconsistencies in route for model & provides decision-maker amid

measure of these inconsistencies. A consistency ratio is taken as the ratio of consistency of the results being tested the route for the consistency of the same problem evaluated amid random numbers. This ratio provides the user amid a value that can be used the route to judge the relative quality of the results. If a consistency ratio is less than 0.10 is obtained, then the results are sufficiently accurate, & further evaluation is not needed. However, if the consistency ratio is greater than 0.10, the results may be arbitrary & the preferences should be re-evaluated or discarded. The great advantage of the AHP lies in its ability to handle complex real-life problems & amid its ease of use. Compared amid five different utility models for that determining weights & priorities, AHP was found the route to produce the most credible results of all the models tested. The ability of the AHP to analyze different decision face the route for amid out the need for that a common numerate, other than the decision-makers' assessments, makes it one of the favourable multi-criteria decision support the route for when dealing amid complex socio-economic problems in developing countries [23, 24]. It is because it enables social, cultural, & other non-economic considerations the route to be in the route for the decision-making process. We illustrate the procedure amid the following research study from selecting the best coating mate-

rial in the preparation of a novel capsule.

### **AHP Techniques for that the Formulation of NPS Containing Antidiabetic Bioflavonoids**

Dual Polymeric NPs organized using an assortment of different procedure; however, selecting an appropriate technique is factual, as the assortment of a badly chosen method may result in the defeat of capital, finance & moment. Hence, a decision taking the route for AHP was utilized in determining a most appropriate technique for that formulation of dual flavonoid NPs.

#### **AHP Process**

AHP technique utilize following systematic steps

- Structuring multiple-choice criteria in a hierarchy
- Assessing the consequence of decision aspect
- Comparing alternatives for that each criterion & obtaining an overall priority of alternatives

#### **Overall Ranking Prioritization**

An overall ranking for that the selected criteria was performed as follows,

- Priority weights are considered & compared in a fair manner
- Average Normalized Column method has been used for that prioritization
- In this evaluation, the components of each column have been alienated by the computation of the column.
- The elements in all row were summed & this is alienated through components the route for all rows.
- This priority weights method the following formula is used,

In our present audit, an approach has been made in transit for select the polymer & system for the status of Nanoparticles containing Antidiabetic Bioflavonoids amid the broad assortment of techniques & materials available for the manufacturing of Nanoparticles; it is to a great degree basic for that the expert in transit for select the fitting methodology. Regardless, the time & material resources spend in the decision of system & materials will control the postponed researching time & inconsequential utilization on trying out at all the procedure. In our present survey, an initiative has been gone up against the path for a handle for that mentioned issue & in transit for select the fitting method & polymer by Chain of significance model introduced by Dr Thomas L Saaty in the 1960s. We found that-nanoprecipitation system & have the most astonishing need weights as compared amid the rest of the techniques & materials independently. Choosing the right coat in materials in the formulation of

polymer secured case estimations for that is a noteworthy decismolecule thus will be the technique for Nanoparticles course of action. Implementing appropriate evaluation & decismolecule in transit should be considered at the decision of coating materials in various complex decismolecule making assignments. One of the signs in transit fools that-can be used at the coating material decision is Investigative Chain of significance Process (AHP). The, made at the Ware course form School of Business by Saaty, is a serious & versatile weighted scoring decismolecule making plan in transit for help people set needs & make the best decision<sup>1</sup> has been for the most part used in travel for handle multicriteria decismolecule making in both academic research & in industrial practice. AHP has been completed in all applications related in transit for decismolecule making & this moment predominantly used in the theme of assurance & evaluation, especially in the area of individual & social classes. Generally, implementing AHP relies on upon understanding & data of the authorities or customers in travel to determine the face course for affecting the decismolecule handle. AHP isan intuitive technique for that formulating & analyzing decisparticles, however, referred to that-AHP approach is a subjective methodology. AHP is not quite recently used as alone in transit for furthermore can be integrated with another methodology. AHP can be combined with another methodology, for instance, quality limit sending, data envelopment examination, & its integration can be used in travel for a wide grouping of fields especially in logistic & manufacturing areas [25, 26]. There are different activities in the coating material assurance handle related in transit for decismolecule making. Distinctive methods have-been made in transit for assist makers to make the right decismolecule at the coating material decision arrange in the composing. The essential decismolecule procedure is the best thought decision method. This system involves a subjective comparison of each alternative in transit for a reference or data elective & run the show. It is useful in coating material decision since it requires the least measure of bare essential in the formation. In any case, no measure is given of the noteworthiness of each of the criteria & it doesn't allow for coupled particles. In the support, the adequacy in selecting the coating materials, a reasonable appraisal & decismolecule in travel fools require in transit to be considered 4-8. Since AHP application is associated in travel for evaluating & selecting unmistakable decisions, it can moreover be executed in the coating material decision prepare, especially in selecting the most suitable coating materials. At this compose;

originators have-in transit for considered different face the course for the demand in transit to determine & select the perfect decismolecule decisions. It is by virtue of the in the appropriate decismolecule can lead in travel for a possible thing for being redesigned or remanufactured. The positive conditions of using AHP include achieving higher quality thing & shorter thing. AHP gets both subjective & target evaluation measures, providing an accommodating mechanism from that checking the consistency of the appraisal measures & decisions prescribed by the mass in this way, reducing inclination in the decismolecule making. AHP licenses relationship in transit for minimizing typical pulls of decismolecule making handle, for instance, the non-appearance of focus, planning, venture or proprietorship, which-finally are over the top dispelling powers that-can keep bunches from making the right choice. it discusses AHP utilization in the area of coating material assurance handle in the change of a polymer secured case estimations for. In this way, employing AHP can make the control of coating material decision handle shorter, reduce cost & make higher thing quality. Although a couple works have-been done in terms of AHP execution in the coating material decision prepare, there is still to a great degree confined in the formation or study on the coating material assurance in the progression of polymer secured case estimations for that [9, 10]. In this way, the consider speaks to the usage of AHP in evaluating & determining the most suitable coating materials in the headway of polymer secured compartment estimation. Selecting the right coating materials in the formulation of polymer secured case measurement for that is a critical decision. Implementing appropriate evaluation & decismolecule in transit should be considered at the decision of coating materials involves various complex decismolecule making errors. One of the profitable in travel fools that-can is used at the coating material assurance is indicative levels of leadership Process (AHP). The AHP, made at the Where course for School of Business by Saat, is a fit & versatile weighted scoring decismolecule making plan in transit for help people set needs & make the best decismolecule. AHP has been extensively used in transit to comprehend multicriteria decismolecule making in both academic research & in industrial practice. AHP has been executed in all applications related in transit for decismolecule making & is at present predominantly used in the theme of assurance & evaluation, especially in the area of engineering, individual & social orders. Generally, implementing AHP relies on upon involvement & data of the experts or customers in travel for determining the course for affecting the decismolecule

handle according in transit for Hajeeh & Al-Othman AHP is an intuitive procedure for that formulating & analyzing decisparticles. At the same time, Cheng & Li referred to that-AHP approach is a subjective methodology. AHP is not quite recently used as a stand-alone in transit for also can be integrated with another procedure. AHP can be combined another strategy; for instance, quality function deployment (QFD), data envelopment examination (DEA), & its integration can be used in travel for a wide combination of fields especially in logistic & manufacturing areas [Ho 2008]. There are different activities in the coating material decision handle related in transit for decismolecule making. Diverse systems have-been made in transit for assist originators in travel for making the right decismolecule at the coating material decision arrange in the composing. The clear decismolecule methodology is the Pugh thought decision procedure. This method involves a subjective comparison of each choice in transit for a reference demonstrate by measure. It is useful in coating material decision since it requires the least measure of point by point in the formation. Regardless, no measure is given of the criticalness of each of the criteria & it doesn't allow for that coupled decisparticles. Therefore, there is a hazard that the final thought can be imprecise. In selecting the coating materials, a fitting appraisal & decismolecule in travel fools require in transit to be considered. Since AHP application is associated in travel for evaluating & selecting various alternatives or decisions, it can similarly be completed decide coating material assurance get ready, especially in selecting the most legitimate coating materials. At this orchestrate, originators have-in transit for considering different face course for in demand in transit to determine & select the perfect decismolecule options. It is by virtue of the inappropriate decismolecule can lead in transit for possible thing to be redesigned or remanufactured. The purposes of enthusiasm for using AHP include achieving higher quality thing & shorter manner offered thing about feel researched headway hand.

For the selection of Nanoparticles preparation method & polymer, which plays a crucial role in the formulation of Nanoparticles, the following criteria's are considered amid the options as methods & various polymers respectively. By & large, AHP consists of three main principles, including pecking order system, need investigation & consistency check. Formulating the decisparticle issue in the form of the Chain of importance system is the initial step of AHP, amid on the way for level representing worldwide destinations or objective, the centre levels representing criteria & sub-criteria, &



the decision particle options at the most minimal level. The wise pair comparison of all the selected criteria's on each sub criteria's were given in table No: 2-15 & Figure No: 2-5. Pairwise comparison of the essential parameters (Criteria's) concerned amid the priority weights of nanoparticulate preparation method & polymer selection by Hierarchy model has been conducive. Nano precipitation method & gum ghatti polymer has got the highest priority weights in the pairwise comparison method using the Hierarchy model by Thomas saaty L of lending priorities. The nanoprecipitation method & gum ghatti are the more suitable method for the designing of Nanoparticles containing Antidiabetic Bioflavonoids. Besides, the utilization of Hierarchy Process for the selection of Nanoparticle preparation method & polymer for the designing of Antidiabetic Bioflavonoids has been beneficial for our research work to take it to the next stage.

### SUMMARY AND CONCLUSION

In this research work, we investigated the difficulties in the selection of the best method for the preparation of Antidiabetic bioflavonoids nanoparticles encompasses natural polymer particles. The selection of an unsuitable method may lead to loss of material resources, financial resources and time of research. To overcome these difficulties, we applied the AHP method, which can be used to evaluate and select the best alternative based on the criteria and sub-criteria aspects of the decision. The AHP analysis exhibits that alternative M4, the nanoprecipitation method, is the most suitable method for the preparation of RM loaded nanoscale solid lipid particles. The nanoprecipitation method was implemented to fabricate Antidiabetic bioflavonoids nanoparticles encompasses natural polymer particles.

### CONFLICT OF INTEREST

Authors declared no conflict of interest.

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