EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 11
Issue: 6
405-407
Year: 2024

BIOCHEMICAL ANALYSIS OF UNPURIFIED AND PURIFIED AMANAKUSEEDS *(Ricinuscommunis)* - A COMPARATIVE RESEARCH STUDY

Jeraldin Prabula Rani J.[1]*, Sathya J. Scottlin G.[1], Sulfin Nihar S.[2] and Abdul Kader Jeylani M. P.[3]

[1]PG Scholar, Department of Nanju Maruthuvam, Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamil Nadu, India.
[2,3]Professor, Department of Nanju Maruthuvam, Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamil Nadu, India.

***Corresponding Author: Jeraldin Prabula Rani J.**
PG Scholar, Department of Nanju Maruthuvam, Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamil Nadu, India.

Article Received on 26/04/2024 **Article Revised on 17/05/2024** **Article Accepted on 07/06/2024**

ABSTRACT
Siddha system of medicine is one of the ancient medical practices which includes treating the patient using herbals, metal and minerals. In siddha literature it is instructed that the Amanaku seeds must be priorly purified before extracting the oil from the seeds. The main objective of the study is to evaluate the compounds present in the unpurified amanaku seeds and purified amanaku seeds. The biochemical analysis conducted on the extract of unpurified amanaku seeds reveals the presence of Calcium, Sulphate, Chloride, Ferrous iron, unsaturation and Amino acid. Were as in purified amanaku seed extract reveals the presence of Sulphate, Chloride, Ferrous iron, unsaturation, Amino acid and Reducing sugar. The compounds present in Purified Amanaku seeds enhances the therapeutic effect of the medicine prepared from the drug.

KEYWORDS: Siddha, Amanaku seeds, Compounds.

INTRODUCTION
Siddha system of medicine is one of the ancient medical practices which includes treating the patients using herbals, metals and minerals.[1] The process of medicine preparation even though it looks simple each and every step holds lots of scientific things behind it. The first step in preparing medicine is the process of purification of the raw materials that is indicated by the term suddhi in the Siddha literature.[2] From the term suddhi itself we can understand the process is carried out to remove the toxic impurities from the raw drug.

Amanaku seeds have been studied by many researchers for its nutritive value and the uses of oil obtained from the seeds.[3] The most alarming part is the role of ricin present in the seeds. In Siddha literature it is instructed that the seeds must be priorly purified before extracting the oil from the seeds.[4] The oil extracted from the purified seeds are indicated for the aliments of pregnant women and kids.[5]

MATERIALS AND METHODS
REQUIRED MATERIALS
Amanaku seeds *(Ricinuscommunis)*
Tender coconut water.

METHOD OF PURIFICATION[4]
The first step of purification is removal of seed coat and then the seeds are packed in a white cloth and hanged in a stick then the packed seeds are immersed in a pot containing tender coconut water by placing the stick at the mouth of the pot and then the contents are boiled at low flame.

At the end the seeds are unpacked then washed in the running tap water and dried.

METHOD OF EXTRACT PREPARATION
5 gms of the drug was weighed accurately and placed in a 250 ml clean beaker then 50 ml of distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100 ml volumetric flask and then it is made to 100 ml with distilled water This fluid is taken for analysis.

QUALITATIVE ANALYSIS

Table 1: Biochemical analysis of unpurified Amanaku seeds and Purified Amanaku seeds.

S.No	EXPERIMENT	OBSERVATION	INFERENCE	
			UnpurifiedAS	PurifiedAS
01	**TEST FOR CALCIUM** 2 ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4% Ammonium oxalate solution.	A White precipitate is formed	Presence	
		No White precipitate is formed		Absence
02	**TEST FOR SULPHATE** 2 ml of the extract is added to 5%Barium chloride solution.	A White precipitate is formed	Presence	Presence
03	**TEST FOR CHLORIDE** The extract is treated with silver nitrate solution.	A white precipitate is formed	Presence	Presence
04	**TEST FOR CARBONATE** The substance is treated withconcentrated HCl.	No brisk effervescence isformed	Absence	Absence
05	**TEST FOR STARCH** The extract is added with weak iodine solution.	No blue colour is formed	Absence	Absence
06	**TEST FOR FERRIC IRON** The extract is acidified with Glacialacetic acid and potassium ferro cyanide.	No blue colour is formed	Absence	Absence
07	**TEST FOR FERROUS IRON** The extract is treated with concentrated Nitric acid and Ammonium thiocyanate solution.	Blood red precipitate is formed	Presence	Presence
08	**TEST FOR PHOSPHATE** The extract is treated with Ammonium Molybdate and concentrated nitric acid.	No yellow precipitate is formed	Absence	Absence
09	**TEST FOR ALBUMIN** The extract is treated with Esbach's reagent.	No yellow precipitate is formed	Absence	Absence
10	**TEST FOR TANNIC ACID** The extract is treated with ferric chloride.	No blue black precipitate isformed	Absence	Absence
11	**TEST FOR UNSATURATION** Potassium permanganate solution is added to the extract.	It gets decolorized	Presence	Presence
12	**TEST FOR THE REDUCINGSUGAR** 5 ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and add 8-10 drops ofthe extract and again boil it for 2 minutes.	No colour change occurs	Absence	
		Colour change occurs		Presence
13	**TEST FOR AMINO ACID** One or two drops of the extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the same and dried it well.	Violet colour is formed	Presence	Presence
14	**TEST FOR ZINC** The extract is treated with PotassiumFerro cyanide.	No White precipitate is formed	Absence	Absence

RESULT AND DISCUSSION

The Biochemical analysis of Unpurified and Purified amanaku seeds extract are tabulated. Both are having Sulphate, Chloride, Ferrous iron, Unsaturation and Amino acids. The difference between the unprified and purified amanaku seed extract are the presence of Calcium and Reducing sugar. The reducing sugar which was detected in the purified seed extract was not detected in the unpurified seed extract. This may be due to the use of tender coconut water in the process of purification. The biochemical analysis showed the variation in unpurified and purified water extracts. The Sulphate, Ferrous iron, Chloride and Amino acids are said to have medicinal properties. Several studies have proposed an

essential role of sulphate in fertilization and maintenance of pregnancy. The placenta and fetus have a relatively low capacity to generate sulphate from methionine and cysteine so the sulphate is supplied to the fetal blood and taken up bythe fetal cells from the metarnal circulation.[6] Human body requires iron for the synthesis of its oxygen transport proteins, in particular hemoglobin and myoglobin. At physiological pH, ferrous iron (Fe^{+2}) is rapidly oxidized to the insoluble ferric (Fe^{+3}) form. But the transport of iron via the apical membrane of enterocytes occurs in the ferrous form (Fe^{+2}) which enhance the solubility and uptake of ferric iron.[7]The chloride ion is an essential electrolyte and is the predominant anion in extracellular fluid. It functions importantly in many fundamental biological processes including regulation of pH, maintenance of intracellular volume and resting membrane potential and cell growth and differentiation.[8] There is increasing evidence that regular essential amino acid intake as a part of an oral diet is effective in reversing muscle catabolism, promoting muscle anabolisam and restoring immunological function.[9]

CONCLUSION

Unpurified Amanaku seeds and purified amanaku seeds are screened for its biochemical property. On comparing the results of the analysis of unpurified and purified amanaku seeds it is evident that compounds present in the purified and unpurified form are more or less same. The presence of sulphate, ferrous iron, chloride and amino acid have therapeutic value. In addition the detailed study of amino acids present in both the unpurified and purified amanaku seeds is further needed.

REFERENCE

1. Dr. Sornamariyamal I, Thathukalin vilakkamum marunthu muraigalum, 1st Edition, Oct. 2022; 17.
2. Dr. Deva Asirvatha Samuvel M.D(s), Marunthusei Iyalum Kalaiyum, Department of Indian Medicine and Homeopathy, 1st Edition, 1992; 283.
3. Adebayo OC, Ogidi CO, Akinyele BJ, Nutritional value and safety of castor bean (Ricinus communis) seed detoxified in solid-state fermentation by pleurotus ostreatus. Biofarmasi J Nat Prod Biochem, 2019; 17: 55-64.
4. The Siddha formulary of India – Part II; Government of Indian Ministry of Health and Family Welfare, 1st Edition, 2011; 379.
5. Teriyar, Thylavarga Surukam, Ulaga Tamilaraichi Niruvanam, Chennai, 1st Edition, 2015; 132.
6. Paul Anthony Dawson, Role of sulphate in Development, Reproduction Jul. 29, 2013; 146(3): R81-9.
7. Nazanini Abbaspour, Richard Hurrell, Roya Kelishadi Review on iron and its importance for human health, J Res Med Sci., Feb., 2014; 19(2): 164–174.
8. Stephan C. Jahn, Laura Rowland – Faux, Peter W. Stacpoole, Margaret O. James, Chloride concentrations in human hepatic cytosol and mitochondria are a function of age, Biochem Biophys Res commun, Apr. 10, 2015; 459(3): 463-468.
9. Francesco S.Dioguardi Clinical use of amino acids as dietary supplement: Pros and cons. J Cachexia sarcopenia Muscle, Jun., 2011; 2(2): 75-80.
10. Naveen.E, Anusha T.P., Sulfin Nihar.S., AbdulKader Jeylani.M.P., Comparitive Research study on Biochemical analysis of Unpurified and Purified Miruthar Singi (Lead Sulphide), European Journal of Biomedical and Pharmaceutical Sciences, 2023; 10(6): 193-195.