

**PRELIMINARY PHYTOCHEMICAL SCREENING OF DIMOCARPUS LONGAN LOUR SEEDS**

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**ABSTRACT**

Dimocarpus longan lour fruit is a species belonging to the family Sapindaceae. It is a significant source of many phytochemicals with varying biological activities. The present investigation includes preparation of different solvent extracts of seeds using different method like Soxhlet apparatus, warm extraction & cold extraction. The present work focus to evaluate the physicochemical and preliminary phytochemical studies on seeds. This study of drug had been done on ethanolic, methanolic and distilled water extracts by three different procedure. It is a valuable method for the quantitative determination of phytochemicals present in plant extract. These studies aim to investigating the various phytochemical screening of *dimocarpus longan lour seeds* to showed the presence of Tannins, Proteins and amino acids, Glycosides, Phenolic compounds by using different extraction method for better yield. The result reveals that flavonoid, tannin, steroids, amino acid, glycosides and alkaloid. Hence the plant is recommended for therapeutical purpose.

**KEYWORDS:** Phytochemical screening, Dimocarpus longan lour seeds, Flavonoid, Alkaloids, Soxhlet apparatus.**1. INTRODUCTION**

Plants and herbs, since times immemorial, have been used in virtually all cultures as a source of medicine. The widespread use of herbal remedies and healthcare preparations, as those described in ancient texts such as the Vedas and the Bible, and obtained from traditional/folklore practices, have been traced to the occurrence of natural products with medicinal properties. The active screening of natural products to yield synthetic pharmacologically active compounds is one of the most important aspect in drug development (Cragg et al, 1997).

Traditional systems of medicines are popular in developing countries and up to 80% of the population relies on traditional medicines/folk remedies for their primary health care need. Hence, there is a need to discover an alternative agent from natural sources. Longan (*Dimocarpus longan* Lour.), which was originated in China and belongs to the Longan genus of *Sapindaceae*, is a famous tropical and subtropical fruit (Wu et al., 2007). As an edible fruit and traditional Chinese medicine, longan has been consumed for thousands of years (Zhang et al., 2020). Due to the high leveled primary metabolites including sugars (Chen et al., 2015; Shuai et al., 2016), organic acids (Hu et al., 2006) and amino acids (Dai et al., 2010) as well as abundant secondary metabolites containing polyphenols, flavonoids, alkaloids (Tang et al., 2019), polysaccharides (Yang et al., 2009), vitamins,

nucleotides (or nucleosides) (Xiao et al., 2007), tannins, proantho-cyan idins and other bioactive compounds (Sheng and Wang, 2010), the longan pulp has been used as a traditional Chinese medicine for a long history to promote blood metabolism, soothe nerves, relieve insomnia, prevent amnesia, extend longevity, cure neural pain and swelling, treat palpitation and serve as anti-hyperglycemic agents in Asian countries (Li et al., 2015; Park et al., 2010; Yang et al., 2008; Yi et al., 2012; Zhang et al., 2020; Zhu et al., 2013). Longan seeds are used to prevent pain, hemorrhage, hernia, and skin diseases in Chinese folk medicine. The seeds act as antioxidant, prevent human colorectal carcinoma cells, and they contain Gallic acid, ellagic acid, and corilagin. The current study was undertaken to investigate the analgesic, CNS depressant and anti-diarrheal effects of some solvent extracts of the seeds of *D. longan* (Anna. *Met. al* 2017). In recent years, studies on metabolites in longan fruits were emerged and increased. The present investigation includes the preparation of methanolic, ethanolic & distilled water extracts from seed by continuous extraction using Soxhlet extraction, warm extraction & cold extraction for the screening of phytochemical constituents present in *dimocarpus longan lour seeds* extract.

**2. MATERIAL AND METHOD****2.1 Plant selection & collection:-** Selection of plant was based on traditional claim of medicines. Plant

material was collection from local market in Indore. The fresh weight of fruit used for sample preparation for extraction was calculated. The plant material was identified and authenticated on the basis of macroscopic and microscopic characters as *Dimocarpus longan*. The plant specimen voucher was deposited within the institute.

**2.2 Preparation of extraction:-** *Dimocarpus longan* four fruits washed by distilled water then peeled and seeds were carefully separated. The seeds which collected were washed thoroughly with distilled water for extraneous matter. They were dried and grind with the help of grinder.

**A. Soxhlet apparatus:-** Grind powder were passed through sieve and collect fine powder. 500 grams of dried longan seed powder was collected and extracted with 1 liter of each solvent (ethanol, aqueous methanol & distilled water) in soxhlet apparatus for 1 week. The pooled extracts were concentrated and then evaporated under vacuum and further evaporated by heating on 80°C water bath to dryness. Collect the product and stored in refrigerator in a closed container for further use.

**B. Warm extraction:-** About 10 g of dried powder of seed were taken in 250 ml conical flasks with cap, and 100 ml of each solvent (ethanol, aqueous

methanol & distilled water ) to respective flask. The flasks were kept in rotary incubator shaker at 40 °C and 150 rpm for 24 hrs. The extract was then filtered with Whattman filter paper under vacuum and the filtrate was dried at room temperature.

The percentage yield of the extract was calculated by using following formula,

$$\text{Percentage yield} = \frac{\text{Practical yield}}{\text{Theoretical yield}} \times 100$$

**C. Cold extraction:-** About 10 g of dried powder of seed were taken in separate 250 ml conical flasks with screw cap, and then 100 ml of each solvent (ethanol, aqueous methanol & distilled water ) was added to the flask. The flasks were kept at room temperature with 30 min. shaking after each 24 hrs. for 7 days. The extracts were then filtered by using Whattman filter paper under vacuum and dried at room temperature in watch glass dish. Weight of each dish was noted prior to drying of the extracts. The weight of each watch glass dish after drying of extracts was also noted. The weight of the extract was then calculated from the difference.



Figure 1:- *Dimocarpus longan* lour seed.



Figure 2: *Dimocarpus longan* lour seed extract powder.



Figure 3: *Dimocarpus longan* lour seeds ethanolic extract.

**3. PRELIMINARY PHYTOCHEMICAL ANALYSIS**

Preliminary phytochemical tests were conducted on test extract to detect the presence of phytochemicals by below mentioned the standard methods described in the Pharmacognosy text book of Trease and Evans.

**Percentage yield:-** The dried powder of *Dimocarpus longan lour* seeds was extracted with ethanol, methanol & distilled water using Soxhlet apparatus, warm extraction & aqueous extraction method. The percentage yield of extract was found to be 80% w/w, 60% w/w & 28% in ethanol, 82% w/w, 63% w/w & 30% methanol & 51% w/w, 45% w/w & 21% distilled water.

**4. RESULT**

**4.1 Extractive yield of extract**

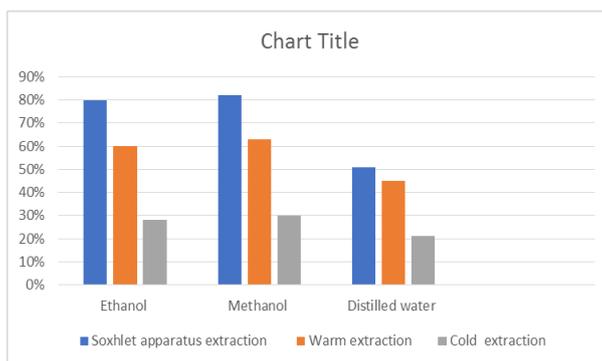


Figure 3:- Yield of seed extract with various Solvents and Extraction methods.

**4.2 Preliminary phytochemical screening:** - Phytochemical screening of *Dimocarpus longan lour* seeds extract showed the presence of the various phyto-constituents like Flavonoids,

saponins, tannins, alkaloids, carbohydrate, steroids, Amino acid/ Protein, glycosides and Gums and Mucilage.

**Table 1: Phytochemical screening of D. longan fruit seed extract by using different solvent.**

S.no	Test	Ethanol extract	Methanol extract	Aqueous extract
<b>I</b>	<b>Flavonoid</b>			
1	Alkaline reagent test	+	+	+
2	Lead acetate test	+	+	+
3	Ferric chloride test	+	+	+
4	Shinoda test	+	+	+
<b>II</b>	<b>Saponins</b>			
1	Foam test	-	-	-
2	Froth test	-	-	-
3	Haemolysis test	-	-	-
<b>III</b>	<b>Tannins</b>			
1	Gelatin test	+	+	+
2	Ferric chloride test	+	+	+
<b>IV</b>	<b>Alkaloids</b>			

1	Mayers test	+	+	+
2	Hager's test	+	+	+
3	Wagner's test	+	+	+
<b>V</b>	<b>Carbohydrates</b>			
1	Molisch's test	-	-	-
2	Fehling's test	-	-	-
3	Benedict's test	-	-	-
<b>VI</b>	<b>Steroids</b>			
1	Salkowski test	+	+	+
	Liebermann-Burchard test	+	+	+
<b>VII</b>	<b>Amino acid/ Protein</b>			
1	Ninhydrin test	+	+	+
2	Biuret test	+	+	+
	Xanthoprotein test	+	+	+
3	Millon's reagent test	+	+	+
<b>VIII</b>	<b>Test for glycosides</b>			
1	Modified Borntrager's Test	+	+	+
	Legal's Test	+	+	+
<b>IX</b>	<b>Test for Gums and Mucilage</b>	-	-	-

## 5. DISCUSSION

It was observed that in general the extraction yields obtained with methanol and ethanol were more as compared to distilled water. In almost all the methods amongst all the solvents methanol has given better yields by using Soxhlet method and warm extraction method. The details of extraction with Soxhlet extraction, warm extraction and cold extraction are given in fig. 3.

*Dimocarpus longan seeds* contains different secondary metabolites (phytochemicals) with biological activity that can be of medicinal values. Longan seeds are used to prevent pain, hemorrhage, hernia, and skin diseases in Chinese folk medicine. The seeds act as antioxidant, prevent human colorectal carcinoma cells, and they contain Gallic acid, ellagic acid, and corilagin. The current study was undertaken to investigate the analgesic, CNS depressant and anti-diarrheal effects of some solvent extracts of the seeds of *D. longan*.<sup>[6]</sup> Table 1 Indicates the presence of phytochemical constituents in different solvent extraction *dimocarpus longan seeds* extracts. The qualitative phytochemical analysis of the ethanolic, methanolic and distilled water extracts indicates that Tannins, Proteins and amino acids, Glycosides, Phenolic compounds were present and saponin, carbohydrate and mucilage and gum were not present in *dimocarpus longan* seed extract. The result reveals that flavonoid, tannin, steroids, amino acid, glycosides and alkaloid. Hence the plant is recommended for therapeutical purpose.

## 6. CONCLUSION

The phytochemical analysis is very much important to evaluate the possible medicinal utilities of a plant and

also to determine the active principles responsible for the known biological activities exhibited by the plants. The result of this study shows the presence of some phytochemicals such as flavonoid, tannin, steroids, amino acid, glycosides and alkaloid in methanolic, ethanolic & distilled water extracts of *dimocarpus longan lour seeds*. The preliminary phytochemical tests are helpful in finding chemical constituents in the plant material that may lead to their quantitative estimation and also in locating the source of pharmacologically active chemical compound. Extraction of a phytochemical from the plant material is mainly dependent on the type of solvent used. Similarly, the test applied for phytochemical analysis determines the presence or absence of a phytochemical in the sample. Hence, two or more different method are perform by using different solvent were performed for more accurate results.

Thus, it is concluded from the above study that its medicinal properties might be due to the presence of some phenolic compounds and other phytochemicals present in this plant. This is an ongoing study and further work is being carried to investigate its biological activities.

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