

## Formulation and Evaluation of tablet Containing goat milk and sterculia colorata(kaushi)

Manorama S. Pardeshi\*<sup>1</sup> Ashwini S. Pundkar<sup>1</sup>, Kaustubh S.Naik<sup>2</sup>, Aishwarya P. Nannaware<sup>3</sup>, Divya G.Pandit<sup>4</sup>

*Rajesh Bhaiyya Tope College of B. Pharmacy, Aurangabad, Maharashtra, INDIA.*

Submitted: 12-01-2023

Accepted: 25-01-2023

### ABSTRACT:

Jaundice is a disorder when the skin, mucous membranes, and whites of the eyes develop a yellowish tint. The color of bodily fluids can also alter. We have prepared a tablet that is a mixture of goat milk and *Sterculia colorata* (kaushi). This combination is mainly effective for jaundice. Goat milk is one of a nutraceutical health drink. As goat milk is rich in mineral and vitamin content and has creamy texture, it is used as the replacer for number of the supplements which are people consume daily. Goat milk naturally has small, well-emulsified fat globules, which means the cream will stay in suspension for a longer period of time than cow's milk; therefore, it does not need to be homogenized. *Sterculia colorata*, the scarlet *sterculia* (also known as bonfire tree and in Marathi known as "कौशी" [kaushi]), is a medium-sized tree with spreading branches. It sheds leaves before the onset of flowering. After leaf-shedding, buds sprout and develop into flowers. Also, the value of the genus *Sterculia* and its related genera in traditional medicine and their effective biological activities led to the possibility of finding new sources of drugs for potential applications.

### I. INTRODUCTION:

Herbal medicines are the oldest form of health care known to mankind; herbs had been used by all cultures through history. With the inspiration of encouraging a healthy life and to upgrade the standard of life, usage of medicinal herbs has increased a lot. It was an integral part of the development of modern civilization. As time went on, each tribe added the medicinal power of herbs in their area to its knowledge base. They methodically collected information on herbs and developed well-defined herbal pharmacopeias. A number of traditional herbal medicinal practices have been adopted for the diagnosis, prevention, and treatment of various disease.

Here, we've made a jaundice-treating tablet using goat milk and *Sterculia colorata*. The prevalence of jaundice differs among patient populations; newborns and elderly more commonly present with the disease. The causes of jaundice also vary with age, as mentioned above. Around 20 percent of term babies are found with jaundice in the first week of life, primarily due to immature hepatic conjugation process. Jaundice is defined as a yellow discoloration of the body tissue resulting from the accumulation of excess bilirubin. It is also known as hyperbilirubinemia. Congenital disorders, overproduction from hemolysis, defective bilirubin uptake, and defects in conjugation are also responsible for jaundice in infancy or childhood.

Goat milk is a great dietary source. It provides ample benefits for the health maintenance, physiological process, and in the nutrition of younger and the elderly population, and some studies have reported that it may be consumed by most of the population susceptible to cow milk allergy. Goat's milk contains all the components necessary for human consumption: proteins, lipids, sugars, mineral salts, vitamins, enzymes and water. Since goat's milk's fat doesn't include  $\beta$ -carotenes, it is very white, clean-looking, and matte in colour. The smell of freshly milked goat's milk is quite neutral although sometimes the milk at the end of the lactation period has a characteristic odor due to the capric acid that is associated with the animal. It has a strong odor, as a result of the absorption of aromatic compounds during handling, generally inadequate milking sites, poor hygiene, etc. Goat's milk is an equilibrium mixture of proteins, fats, carbohydrates, salts and other components. It has a constant qualitative composition, but quantitatively varies depending on different factors such as the breed of the animal, the time of lactation, the number of births, the time of the year and the climate of the region.

The genus *Sterculia* was named after the Latin god *Sterculius*. *Stercus* means dung. This name was given to this genus because of the foul-smelling flowers and leaves of some *Sterculia* species. *Sterculia colorata* is a medium-sized tree with spreading branches. It sheds leaves before the onset of flowering. After leaf-shedding, buds sprout and develop into flowers. The tree flowers from March-April. It produces flowers in short dense panicles which occur at the ends of the branches. The flowers are orange-red in colour and hang downwards. The flowering stalks together with flowers are covered with fine downy hairs

giving the whole inflorescence a soft, velvety look. During flowering phase, Colored *Sterculia* is quite prominent and presents a brilliant sight because of its orange-red flowers against a leafless state. The flowers are large, 30 mm long. The flower tube is  $13 \pm 0.8$  mm long, tubular at the base and lobed at the tip. Its rim is surrounded by white soft hair. The corolla looks like it is united inside with the tubular sepals at the base. From the centre of the calyx tube, a staminal column protrudes bearing at its summit 30 anthers. Scarlet *Sterculia* is common in the forests of the Western Ghats and the Deccan.



#### BENEFITS OF GOAT MILK:

- Boosts immune system
- Assists in weight loss
- Helps to reduce blood pressure
- Aids in maintaining strong bones
- Stimulates growth and overall good health
- Prevents heart attacks and coronary complications
- Protects against dangerous effects of climate change
- Anti-hypertensive property
- Overcomes lactose intolerance, dengue fever
- Anti-allergenic property
- Source of prebiotic

**CONFIRMATORY TEST FOR GOAT MILK:**

TEST	PROCEDURE	OBSERVATION	INFERENCE
<b>Protein test ( confirmatory )</b>	Test sol + ammonical silver nitrate sol + NAOH	SILVER mirror	Lactose confirm
<b>Casein test (isoelectric precipitation test )</b>	3 ml of casein sol + 2 Drops of bromo cresol green indicator and mix ( sol will blue in colour) + 1% acetic acid drop by drop till the blue green ppt is seen. (PH of sol 4.6)	Blue green cloudy ppt was seen	Casin is present

**PHARMACOGNOSY OF STERCULIA**

**COLORATA:-**

Kingdom: Plantae  
 Clade: Angiosperms  
 Order: Malvales  
 Family: Malvaceae  
 Genus: Sterculia

Species: *S. colorata*  
 Binomial name- *Sterculia colorata* Roxb.  
 Synonyms : *Firmianacolorata* (Roxb.)  
*Erythrospiscolorata* (Roxb.) Burk.  
*Firmianarubriflora* Kosterm.  
*Erythrospisroxburghiana* Schott & Endl.

**BENEFITS OF STERCULIA COLORATA:**



The genus *Sterculia* was named after the Latin god *Sterculus*. *Stercus* means dung. This name was given to this genus because of the foul-smelling flowers and leaves of some *Sterculia* species.

It is used as a thickener and emulsifier in foods, as a laxative, as a denture adhesive, and in seals for stomas.

**CONFIRMATORY TEST FOR STERCULIA COLORATA:**

TEST	PROCEDURE	OBSERVATION	INFERENCE
Molish test	Aqalc sol of substance + 10% alc sol of alfa naphthol+ conc sulfuric acid	Purple to violet ring at junction	CARBOHYDRATE PRESENT
	5 ml Benedict's		

Benedict's test	reagent + 8 drop sugar solution + Boil (2min)	Green / yellow (Red Ppt)	Reducing sugar present
Fehlings test	2 ml fehlings A and B sol + 2 ml sugarv sol + boill	Brik red ppt	Reducing sugar is present
Tommer's Test	5ml of Tommer's reagent + 3ml of sugar solution+ Boil (2min)	Yellow, Red Ppt	Reducing sugar Present
Barford's test:	2 ml of test solution + 2 ml Barford reagent + Boil on water Bath	Brick red ppt at the Bottom	monosachharides present



## II. MATERIALS AND METHODS:

The goat milk powder was collected from online shopping website([https://www.amazon.in/s?k=goat+milk+powder&crd=RNVSWVQSNMN1&sprefi x=goat+milk+powder%2Caps%2C379&ref=nb\\_sb\\_noss\\_1](https://www.amazon.in/s?k=goat+milk+powder&crd=RNVSWVQSNMN1&sprefi x=goat+milk+powder%2Caps%2C379&ref=nb_sb_noss_1)) and the powder of sterculia colorata was collected from

**SAHUJI AYURVADIC MEDICAL STORE , AURANGABAD**

## EXPERIMENTAL DESIGN:

We have prepared 10 different types of the formulations of tablets. Named as F1, F2.....F10 respectively. After that, the tablets were tested the physical properties of official test such as disintegration, dissolution, and non officialy such as hardness and friability. Tablets of formulation was shown in fig 1



**PREPARATION OF TABLET:**

Tablets was prepared with the help of hands in a round shape at( RAJESHBHAIYYA TOPE COLLEGE OF B PHARMACY). Approx 15 to 20 tablets wasprepare of each formulation.

After the tablet prepatarion they werw sent for the evaluation of physicalproperties of tablet and related study.



**FIGURE 1 ; tablets of formulation**

**FORMULATION CHART :**

TABLET NUMBER	COMPOSITION
Tablet no 1	1 gm of milk powder+ 1 gm kaushi powder
Tablet no 2	1 gm of milk powder+ 2gm kaushipawder
Tablet no 3	1 gm of milk powder+ 3gm kaushi powder
Tablet no 4	1 gm of milk powder+ 4gm of kaushi powder
Tablet no 5	1 gm of milk powder+ 5gm of kaushi powder
Tablet no 6	2gm of milk powder+ 1 gm of kaushi powder
Tablet no 7	2gm of milk powder+ 2gm of kaushi powder
Tablet no 8	3gm of milk powder+ 1 gm of kaushi powder
Tablet no 9	4gm of milk powder+ 1 gm of kaushi powder
Tablet no 10	5gm of milk powder+ 1 gm of kaushi powder

**PREFORMULATION STUDY:****ANGLE OF REPOSE:**

The Angle of repose was tested by the fixed funnel method. The 5 g of powder mixture was poured into a glass funnel. The lower tip of the glass funnel was 5 cm height from the ground. The height (h) and radius (r) of pile were measured, and then calculated as follow:  $\theta = \tan^{-1}h/r$   $\theta$  = angle of repose ( $^{\circ}$ )  $h$  = height (cm)  $r$  = radius (cm).

**Bulk density:**

The 20 g of powder mixture was weighted accurately, gently poured into 100 ml glass cylinder without compacting. The volume of powder mixture was recorded, and then calculated as follow:

Bulk density =  $m/v_0$   $m$  = mass (g)

$V_0$  = unsettled apparent volume (cm<sup>3</sup>).

**Tapped density:**

The glass cylinder with powder mixture from bulk density testing was used to test tapped density. It was tapped using a tapped density tester (Erweka D-63150, Germany) for 1,250 strokes. The volume of tapped powder mixture was recorded, and then calculated as follow:

Taped density =  $M/v_f$   $m$  = mass (g)

$V_f$  = final tapped volume (cm<sup>3</sup>).

**Carr's index:**

Data from bulk density and tapped density testing were used to calculate compressibility index follow Eq. 4:

Compressibility index =  $[(\text{Taped density} - \text{Bulk density}) / \text{Tapped density}] \times 100$

**Hausner's ratio :**

It is a direct indices of ease of measuring the flow of powder.

Hausner ratio was calculated as follow: Hausner ratio =  $V_0/V_f$

$V_0$  = unsettled apparent volume (cm<sup>3</sup>)  $V_f$  = final tapped volume (cm<sup>3</sup>).

**Evaluation Of Formulated Tablets:****FRIABILITY**

The tablets dust was removed before testing. 10 tablets were accurately weighed together, and friability was tested using a Roach Friability tester . After 4 min of rotation at 25 rpm, any loose dust from the tablets was removed before accurately weighing again. If friability was not more than 1.0%, it was considered acceptable.

**Hardness:**

Tablet requires some amount of strength and resistant to friability to mechanical shock of handling in manufacture, packaging, and shipping. Hardness is thus sometimes termed as the crushing strength. 10 tablets were measured using a hardness tester (Digital tablet Hardness tester IKON Delhi). Results were reported as mean $\pm$ SD in kilopond (kP) units.

**DT(DISINTEGRATION):**

For most tablets, the first important step toward solution is break down of the tablet into smaller particles a process known as disintegration. The DT of the tablet was determined in warm goat milk at 37 to 40 $^{\circ}$ C  $\pm$  0.5 $^{\circ}$ C using a Veego Disintegration Tester.

#### Dissolution testing:

Dissolution is the process by which a solid enters into a solution. The dissolution rate is defined as the amount of drug substance that goes into solution per time under the standardized condition of liquid/solid interface, temperature, and solvent composition. Dissolution is one of most important quality control tests and considers a tool for predicting bioavailability. The most direct assessment of a drug's release from various tablet formulation is accomplished through in vivo bioavailability measurement.[21] The instrument USP dissolution apparatus II was used in this studies.

### III. RESULTS:

#### HARDNESS:

Hardness of all formulation was found in b/e the ranges of 4.6 to 5.8 kg/cm<sup>2</sup> the hardness of formulation was measured by hardness tester. Hardness of F0 was poor, F1, F2, F3, F5, F6 and F7 were better.

#### FRIABILITY:

The friability range was shown in Table F5 and F6. Friability of all formulation was found to be 0.39–0.83 except F5 which was not acceptable. The friability of tablet FA, FB F1, F2, F3, F5 and F6 was found to be an acceptable limit, i.e., <1% [Table 5]. There was no capping problem occurs in tablet so it could be considered for commercial use. It produced no loss during shipping process.

#### DT(DISINTEGRATION):

The DT of tablet was between 30 to 45 min for F1, F2, F3, F5, F6 and F7.

### IV. CONCLUSION:

The prepared tablet formulation showed good physical properties such as disintegration, hardness, and dissolution rate. After the comparative study of different formulation having different excipient yielded a conclusion that starch as 25 mg (5%) is suitable for the preparation of 500 mg herbal tablet of PTWE, satisfying all parameter and official testing. From the above research, it was concluded that the new formulation of tablet was made by using goat milk and *Sterculia colorata* (kaushi).

#### AKNOWLEDGMENT:

We are highly thankful to Ms. Prachi Murkute mam (HOD Rajeshbhaiyya tope college of

Bpharmacy), all the staff, workers (Rajeshbhaiyya tope college of b pharmacy), Ms Seema mam (HOD Yashwantrao chavanayurvedic hospital and medical college, aurangabad)

#### **REFRANCES:**

- [1]. [https://www.amazon.in/s?k=goat+milk+powder&crd=RNVSWVQSNMN1&sprefix=g\\_oat+milk+powder%2Caps%2C379&ref=nb\\_sb\\_noss\\_1](https://www.amazon.in/s?k=goat+milk+powder&crd=RNVSWVQSNMN1&sprefix=g_oat+milk+powder%2Caps%2C379&ref=nb_sb_noss_1)
- [2]. Khare CP. Indian Medicinal Plants-An Illustrated Dictionary. 1st ed. New York: Springer; 2007
- [3]. Gupta RS, Sharma R. A review on medicinal plants exhibiting antifertility activity in males. Nat Prod Radiance 2016;5:389-410.
- [4]. 31. Indian Pharmacopoeia: Ministry of Health and Family Welfare, Government of India. Ghaziabad: Published by 31. Indian Pharmacopoeia: Ministry of Health and Family Welfare, Government of India. Ghaziabad:
- [5]. [2:04 am, 11/12/2022] +91 94238 78781: Reference - Jenness R. (1980). Composition and characteristics of goat milk: Review. J. Dairy Sci., 63: 1605-1630.
- [6]. Haenlein G. F. W(2004). Goat milk in human nutrition. Small. Rumin. Res 51: 154-163
- [7]. [2:08 am, 11/12/2022] +91 94238 78781: Roche spend, Kobe's R. Jaundice in the adult patient. Am Fam Physician. 2004 "69(2):299-304
- [8]. <http://dspace.bracu.ac.bd/xmlui/handle/10361/11078> <https://www.asiapharmaceutics.info/index.php/ajp/article/view/2493>