WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 16, 546-549. Research Article ISSN 2277–7105

APPLICATION OF MORINGA OELIFERA AND TERMINALIA CATAPPA GUM AS DRUG BINDER

R. S. A. Sorna Kumar[1]*, A. Seema Sundari[2], M. Kasturi[2] and P. Parkavi[2]

[1]Department of Biotechnology, Jeppiaar Engineering College, Chennai- 600119.

[2]Department of Biotechnology, P.S.R Engineering College, Sivakasi-626140, Tamil Nadu.

Article Received on
06 Oct. 2017,

Revised on 27 Oct. 2017,
Accepted on 18 Nov. 2017,

DOI: 10.20959/wjpr201716-10101

***Corresponding Author**
R. S. A. Sorna Kumar
Department of Biotechnology, Jeppiaar Engineering College, Chennai- 600119.

ABSTRACT

Natural sources such as mucilages and gums possesses good binding properties and can be used as binder for tablets. *Moringa oelifera gum (MOG)* and *Terminalia catappa*gum *(TCG)* both secrets gum with good adhesive property. The present study is to compare the drug release capacity of *Moringa oelifera gum (MOG)* and *Terminalia catappa*gum *(TCG)*using paracetamol tablet. Various properties of the prepared drugs were studied. TCG was found to release faster than MOG.Various properties of the prepared drugs were studied and the results tabulated. TCG was found to release faster than MOG. Based on the studies done, we found that *Terminalia catappa*gum can be used as a binder for fast releasing drugs and *Moringa oelifera*gum has the potential of being used in slow releasing GIT drugs.

KEYWORDS: Gum, *Moringa oelifera, Terminalia Catappa*, Tablet.

INTRODUCTION

Moringa oelifera Lbelongs to Moringaceaefamily[1] andis commonly known as Murungai in Tamil. It is a mediumsized tree and grows up to 8m. The wood is soft. It grows from Himalayas to the Southern part of India, Thailand, Pakistan, Sri Lanka, Africa, Central & Southern America. The plant hasbeen used in traditional medicine for treatment ofinflammation, cardio vascular, gastrointestinal, hematalogical and hepatorenal disorders. Tree of over 5 years prduces gums from its nodes. These are semisolid resins which turns hard upon drying. The gum used for dental caries, astringent and in blood pressure. The gum possesses excellent adhesive properties.

*Terminalia catappa*also called as Indian Badamis a tall deciduous and erect tree reaching a height of 10-20 m. Whorls of nearly horizontal, slightly ascending branches spaced 1-2 m apart in tiers, orstoreys, up the trunk.[2] he leaves have been shown to protect against acute liver injury produced by some hepato-toxicants. In Taiwan fallen leaves are used as herb to treat liver diseases[3] and a potential in the management of sickle cell disorders.[4]

The present study is to compare the drug release capacity of *Moringa oelifera gum (MOG)* and *Terminalia catappa*gum *(TCG).*

MATERIALS AND METHOD

Collection of gum: *Moringa oelifera gum (MOG)* and *Terminalia catappa*gum *(TCG)* were procured from local market and were washed in clean water. 50g of the gum were soaked in 250ml of water for 12 hours. They were then boiled at 121°C for 1h and were then homogenised. The homogenised mixture was then filtered using muslin cloth was dried at 40°C in hot air oven. This was then powdered and used for further studies.

Formulation of tablets: Dispersible tablets of paracetamol were prepared by wet granulation technique using *MOG and TCG* mucilage powderat concentration of 5 and 10%. All the ingredients were weighed and passed through Size 40# sieve. The Mixturewas blend in a double cone blender for 20mins and was compressed on a Cadmach single-stroke punch machine.

Table. 1: Composition of tablet.

	MOG		TCG	
Ingredients	**MOG1 5%**	**MOG2 10%**	**TCG1 5%**	**TCG2 10%**
Paracetamol	100	100	100	100
Lactose	80	70	80	70
Sodium starch glycolate	10	10	10	10
Gum	10	20	10	20

Evaluation of dispersible tablets

Tablets were evaluated for their thickness, bulk density, tapped densitydisintegration time and dissolution. In weight variation test, twenty tabletswere randomly selected and average weight was determined usingan electronic balance. Thickness of tablet was determinedby using Vernercalliper. To measurewetting time of tablet, a piece of tissue paper was folded twice andplaced in a small Petri dish containing sufficient water. A tablet was kept on the

paper and the time for complete wetting of tablet wasmeasured. Disintegration time was determined using USP tabletdisintegration test using 900 mlof distilled water at 37°C.

Disintegration and wetting time studies

The disintegration time and wetting time of the tablets wasdetermined using phosphate buffer solution at pH 5.8at 37±0.5°C.

Dissolution Study

In vitro release of paracetamol from tablets was monitored by using900 ml of SIF (phosphate buffer solution, pH 5.8) at 37±0.5°Cand 75 rpm using programmable Paddle typedissolution tester. Aliquots were withdrawnat 5-minute time intervals and were replenished immediately withthe same volume of fresh buffer medium. Aliquots, following suitabledilutions, were assayed spectrophotometricallyat 274 nm.

RESULTS AND DISCUSSIONS

The gum was slightly soluble in water and waspractically insoluble in ethanol, acetone and chloroform. A 1% w/v solution of MOG and TCG in water showed a pH of 6.5 and 6.8, which is near tothe neutral pH. This suggest that both the gum may be less irritating to the GIT, when used in the uncoated tablets.[5]

Various properties of the prepared drugs were studied and the results tabulated. TCG was found to release faster than MOG. This may be due to the adhesion capacity of *Moringa oelifera gum.*

Table. *2*: characteristics of prepared tablets.

Samples	Thickness (mm)	Bulk density (g/ml)	Tapped density (g/ml)	Disintegration time (min)
MOG1 $_{5\%}$	4±1.4	0.354	0.482	4.37
MOG2 $_{10\%}$	4±0.8	0.320	0.468	5.35
TCG1 $_{5\%}$	4±1.1	0.382	0.473	3.48
TCG2 $_{10\%}$	4±1.2	0.348	0.454	4.17

All the characterization parameters for the prepared granules using different concentration of binders werefound to be within the acceptable limit. This reveals that the granules are having good flow properties andsuitable for tableting. The prepared granules were then compressed to form tablets and these tablets wereevaluated by the different parameters as given in Table 1. All the batches of tablets exhibited good contentuniformity.The disintegration time of

tablet was found to increase with increase in the concentration ofmucilage. The dissolution studies were performed by using paddle type apparatus at 50 rpm ina phosphate buffer medium of pH 5.8 at 37±0.5^{0}C at the predetermined interval of time. TCG was found to release drug in short interval while, MOG slowly released drug. The percentage of dissolution of drug is shown in Fig.1

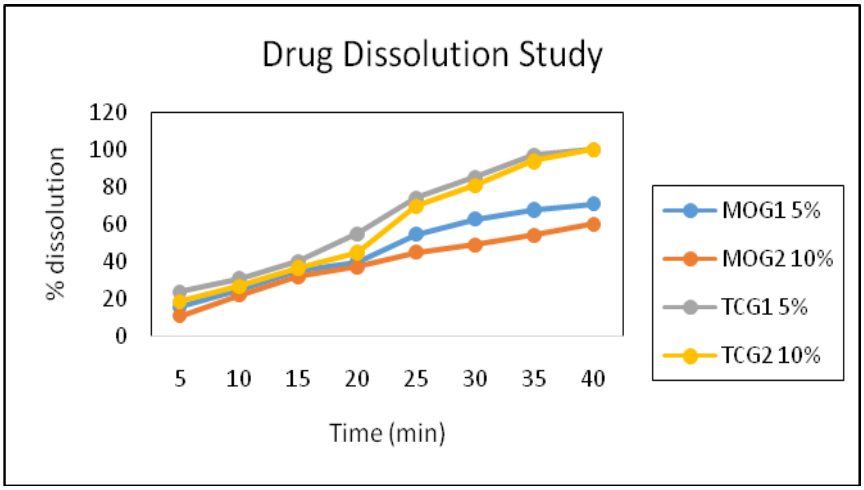

Figure. 1*:* Drug Dissolution.

CONCLUSION

Based on the studies done, we found that *Terminalia catappa*gum can be used as a binder for fast releasing drugs and *Moringa oelifera*gum has the potential of being used in slow releasing GIT drugs.

REFERENCES

1. Sastri BN, The Wealth of India, Raw Materials, Publication and Information Directorate, CSIR, New Delhi, India, 1962; VI (L-M): 425.
2. Orwa C, A Mutua, KindtR, Jamnadass R, S Anthony; Agroforestree Database:a tree reference and selection guideversion 4.0; 2009
3. Wee YC; “A Guide to Medicinal Plants”. Singapore Science Center, 1992
4. Tan, GT; Pezzuto, JM; Kinghorn, AD and Hughes, SH; Journal of Natural Products, 1991; 54: 143-154.
5. Priti Late, Tejal Kasar, Mohini Upadhya; International Journal of Pharm Tech Research, 2014; 6(1): 142-146.