

NOVEL UTILIZATION OF NON EXPLOITED PLANT SEED OILS IN COATING APPLICATIONS:

Author & Presenter Bhalchandra P. Vibhute(*)

(*), Department of Oil Technology

The Laxminarayan Institute of Technology, Rashtrasant Tukdoji Maharaj Nagpur University,

Nagpur, Maharashtra, India-440033

E-Mail: bhalchandra.vibhute10@gmail.com

Accepted for the 15th International Coating Science and Technology Symposium, September 13-15, 2010, St. Paul, MN¹

ABSTRACT

Seed oils of non-exploited crops such as Muskmelon (*Cucumis Melo-Cucurbitaceae*), Bitter Gourd (*Momordica charantia* Linn. *Cucurbitaceae*), Rough Cocklebur (*Xanthium strumarium* L. *Asteraceae*), Red Pepper (*Capsicum annuum* *Solanaceae*), Snake Gourd (*Trichosanthes anguina* L. *Cucurbitaceae*) belongs to the botanical families of Central India region were subjected to physico-chemical properties and lipid class determination to identify their uses for commercial exploitation such as in coatings. As the oils except snake gourd seed oil has excellent surface coating properties such as fast drying, high gloss, excellent tack etc. At present very little work has been carried out on commercial exploitation of these seed oils. The work will be a step towards it, thus generating additional revenue for the poor farmers of this region to improve their standard of living.

INTRODUCTION

Since 19th century, various plants seed extracted oil are used in the edible and non-edible applications. Those from non-edible applications are like Soaps, Detergent, Cosmetics, Paints, Varnishes, Coatings, Lubricants etc. are pre-dominant.

In recent time an overwhelming interest is observed in the development of environment friendly paints and coatings with purpose of waste utilization. Agricultural raw materials have been used for illumination and lubricating as well as coating and paints for many centuries around the world. However, since past few years industrial interest significantly increasing in making ecofriendly paints and coatings, because of the growing awareness for environmental issues i.e. volatile organic solvent emissions and recycling problems associated with it. This paper discusses advances in the use of renewable resources in formulations for various types of coatings.

There is a tremendous requirement of the ecofriendly industrial products. This improves the development of coating formulations with increased performance characteristics. In the era of global revolution in agro based industrial products, fast developing countries like India, whose agricultural commodities or derivatives production is tremendous, can be beneficial. Also there are many valuable plant derivatives going waste in a tremendous quantity.

¹Unpublished. ISCST shall not be responsible for statements or opinions contained in papers or printed in its publications.

Within Such derivatives some non exploited plant seed oils which are treated as a waste, which is having great potential in wide industrial applications. Present papers reports the preparative studies of the utilization aspect of the Musk Melon, bitter Gourd, Rough Cocklebur, Red Pepper and snake gourd Seed oils.

TABLE-I: PHYSICAL CHARACTERISTICS OF SEED AND OILS

seed	family	yield of oil %	Specific Gravity at 28°C	Refractive Index 28°C
Muskmelon (Cucumis melo)	Cucurbitaceae	29.4	0.9010	1.4810
Bitter gourd (Momordica charantia)	Cucurbitaceae	34.1	0.9705	1.4911
Rough Cocklebur(Xanthium Stumarium L.)	Asteraceae	33.8	0.9254	1.4857
Red Pepper (Momordica charantia)	Cucurbitaceae	26.3	0.9140	1.4873
Snake gourd (Trichosanthes anguina L.)	Cucurbitaceae	31.8	0.9342	1.4682

TABLE-II: CHEMICAL CHARACTERISTICS OF SEED OILS

seed oil:	Free fatty acid content %	Unsaponifiable matter %	Iodine value (Wij`s)	Saponificatio value
Muskmelon	2.4	0.93	111.3	153.2
Bitter gourd	1.1	1.51	128.8	186.1
Rough Cocklebur	1.7	0.86	133.4	197.2
Red Pepper	0.97	0.74	136.4	184.2
Snake Gourd	2.48	1.12	124.7	185.4

CONCLUSION:

The Coating made from Musk Melon, bitter Gourd, Rough Cocklebur, Red Pepper was observed having excellent surface coating properties such as fast drying, high gloss, Viscosity, excellent tac..etc except the coating made from snake gourd Seed oils. The work will be a step towards it, thus generating additional revenue for the poor farmers of this region to improve their standard of living.

RERERANCES :

- 1) Book:The Outlines of Paint Technology, by Morgan
- 2) JohannesT.P. Derksen, F.Petrus Cuperus, Peter Kostler, “Renewable Resources In

Coatings Technology: a review ,27(1996) 45-53.

ACKNOWLEDGEMENT

The author is indebted to Dr. Anand S.Kulkarni ,Head,Department of Oil Technology
The Laxminarayan Institute of Technology,Rashrasant Tukdoji Maharaj Nagpur University,
Nagpur , for his help and guidance in carrying out this piece of research work

.....