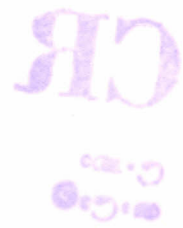


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**A STUDY OF PROTEIN ALLERGY OCCURRENCES IN
PRODUCTS BASED ON NATURAL RUBBER LATEX WITH
SPECIAL REFERENCE TO TOURNIQUET AND NON LATEX
PRODUCT AS A SUBSTITUTE**



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ABSTRACT

The Tourniquet is a strip of material which is used in medical applications to prevent flow of blood from an artery or used for purposes of identifying the vein for intravenous injections. The product needs end use requirement which are of Technical and Aesthetic nature. For number of good reasons, the product is based on Natural Rubber Latex (NRL). It was found that certain types of naturally present proteins in NRL in instances where the products come in contact with body parts that causes the allergic reaction such as skin rashes; hives (skin eruption); nasal eye or sinus symptoms, asthma; respiratory difficulties, low blood pressure. It causes serious and debilitating illness and it is a known cause of occupational fatality.

For this reason, Non Latex Tourniquet (NLT), that offers all the physical characteristics of a Natural Rubber Latex Tourniquet (NRLT) straps appears to be the best substitute. Its properties that leads to successful replacement for NRLT in identified areas where protein allergy is a problem have been discussed. This study was to identify factors that lead to protein allergy and to develop a special formulation and a production process that results in an out put of an unique non-slip, protein-free and powder free tourniquet straps and its potential substitution of NRLT in medical applications. The product provides a latex-free alternative for patients and healthcare workers who are sensitive to protein that is present in NRL. The studies have been found that 1% to 6% of the general public and 8% to 12% of health care workers are at risk of suffering an allergic reaction from exposure to products made out of NRL. It was found that certain types of naturally present proteins in natural latex causes the allergy.

The project study was also aimed at developing a NLT at a price very much competitive to similar products that are available in quality conscious markets in USA, Europe, Scandinavia, Australia and Japan.

The project involved in working on number of formulations based on synthetic elastomers and their blends. The product was also tested on range of application requirements such as strength properties, sterilization capabilities, keeping qualities, packing as per medical norms, safety and finally product presentation and acceptability.

The appropriate tensile and other properties were carried out before and after ageing on all samples. Infra Red (IR) spectroscopic data were also obtained for random samples to make sure the developed samples are free from protein and other toxic compounds. Results so obtained were evaluated to identify the compound design that has yielded the best compromise of process ability parameters and performance characteristics.

After careful examination of performance application and quality aspects of the product, a process was developed for commercial implementation that yeild high productivity while maintaining expectation of a quality conscious buyer who is also looking for a product at a competitive price. In view of the disposable nature of the product, a potential growth in terms of market volume in the medical sector is expected.

It's appropriate to put on record that this project is fully implemented in a subsidiary company of C.W. Mackie & Co. Ltd. , generating around US \$ 500,000 per annum and expect continuous

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