

TREATMENT OF EXAMINATION GLOVES FOR REDUCING EXTRACTABLE PROTEIN CONTENT

K.J. Elizabeth, N.R. Peethambaran, G. Rajammal and K.S. Gopalakrishnan

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The leaching effect of different media at different temperatures on the extractable protein (EP) content in examination gloves was studied. The media used were 0.5% ammonia solution, 0.5% sodium lauryl sulphate (SLS) and 1:1 methanol-water mixture. The effect of chlorination on EP content and the effect of leaching on physical properties of glove samples were also studied. It has been found that treatments like leaching in 0.5% ammonia solution or 0.5% SLS solution at 60°C for about 5 min and chlorination can effectively reduce EP content from latex examination gloves to remarkably low levels.

Key words: Natural rubber latex, Examination gloves, Extractable protein, Physical properties.

K. J. Elizabeth (for correspondence), N. R. Peethambaran, G. Rajammal and K. S. Gopalakrishnan, Department of Technical Consultancy, Rubber Board, Kottayam - 686 009, Kerala, India. *

INTRODUCTION

Extractable protein (EP) content is the cause of the immediate type of allergy while using gloves made from natural rubber (NR) latex (Turjanmaa, 1987; Cormio, 1993). Several studies on this aspect (Bahri, 1993; Zher *et al.*, 1994; Sunderasen *et al.*, 1994; Yip *et al.*, 1994) confirmed that EP content in gloves is the cause of allergy. Therefore, manufacture of gloves with low levels of EP content is relevant. Use of prevulcanised latex, low protein latex (Ng *et al.*, 1994; Ghazaly, 1994) and longer leaching in hot water during the production of gloves (Truscott, 1992; Amir and Hashim, 1993; Darlymple and Audley, 1992; Kamnath, 1992) are some of the methods reported for the production of gloves with lower EP content.

Ammonia solution, sodium lauryl sulphate (SLS) solution and water-methanol mixture are reported to be effective in

removing proteins from rubber (Dennis and Light, 1989; Hasma, 1992). The present study was aimed at evaluating the efficiency of these three media and the effect of chlorination on the removal of EP and their effects on physical properties of the gloves.

MATERIALS AND METHODS

Examination gloves used in this work were obtained from M/s. Anusham Rubber Industries, Nagercoil, Tamil Nadu, India and was produced in an automatic glove manufacturing plant using centrifuged NR latex. The media used for the treatments of gloves were 0.5 per cent ammonia solution, 0.5 per cent sodium lauryl sulphate solution and 1:1 methanol-water mixture. The chemicals used were of reagent grade. Ten per cent sodium hypochlorite (commercial grade) solution was used for surface chlorination of gloves (Aziz, 1994).

Glove samples of medium size, weighing about 8.5 g, were soaked in the