

Analysis of protein extracts from films and gloves produced with hevea and guayule latex

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Scientific context

Latex allergy is due to the présence of hevea proteins in rubber goods (cleaning gloves, nipples, toys,...) and medical devices (gloves, catheter, syringe,...).

Latex allergy is a real health problem

Up to 17% of health care workers suffer from type I hevea allergy

Up to 16% of intra-operative shock are due to this allergy

Presence of cross allergy with some fruits (banana, kiwi,...)

A solution to this problem could be to develop devices with a non allergenic latex : **GUAYULE LATEX**

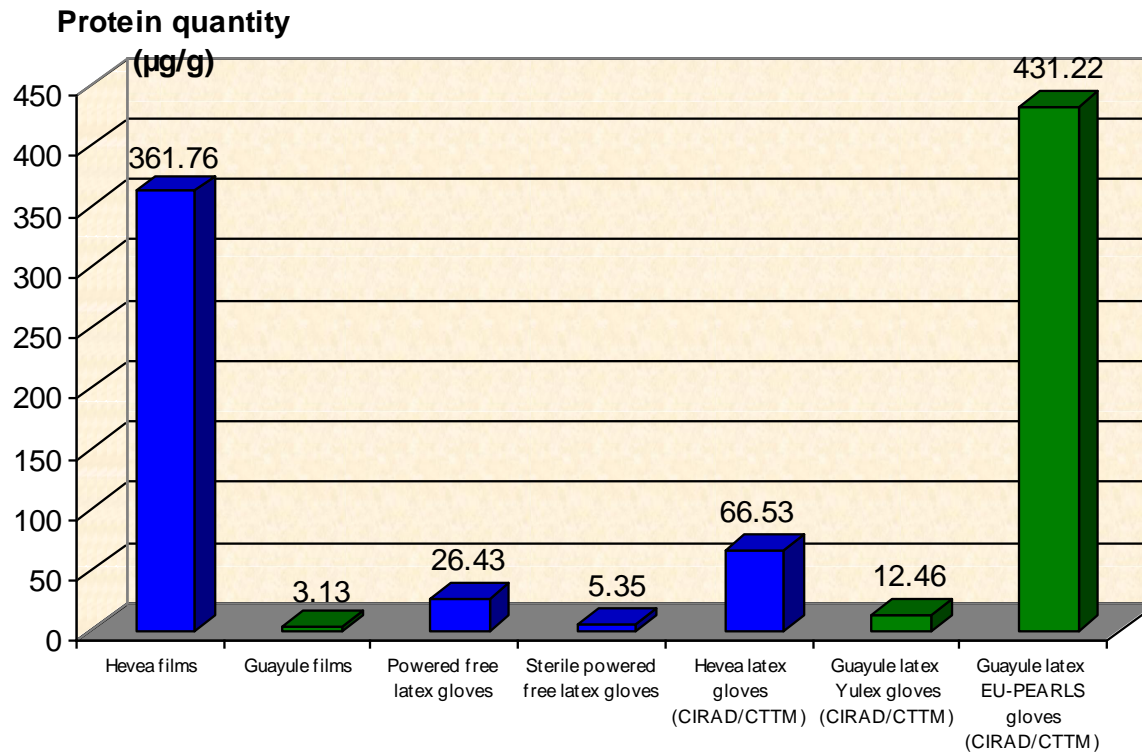
Objective

Collaborative study between CIRAD and National Health product Agency

To compare protein content of Guayule and Hevea device extracts

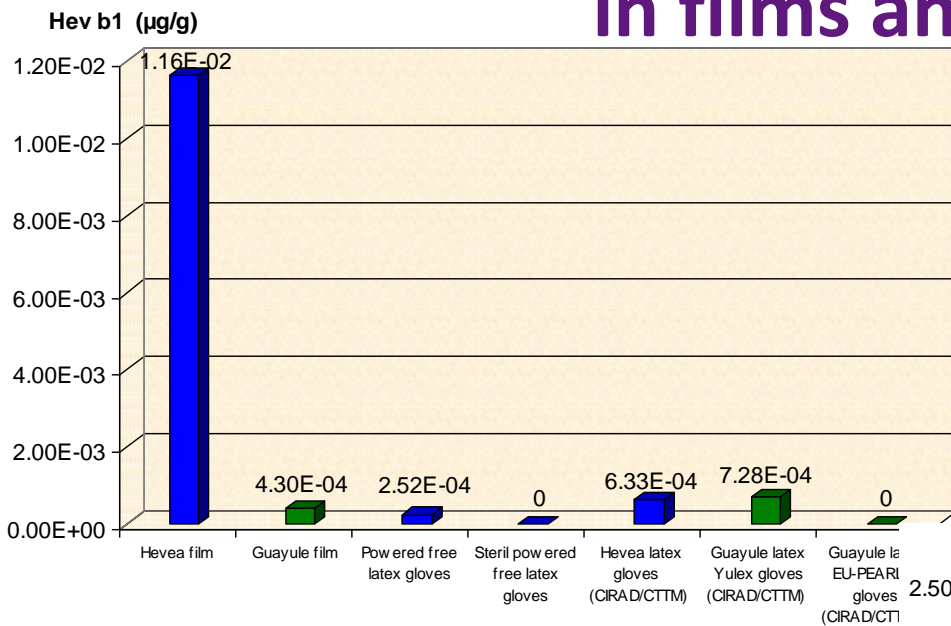


Determination of total protein content in films and gloves extracts



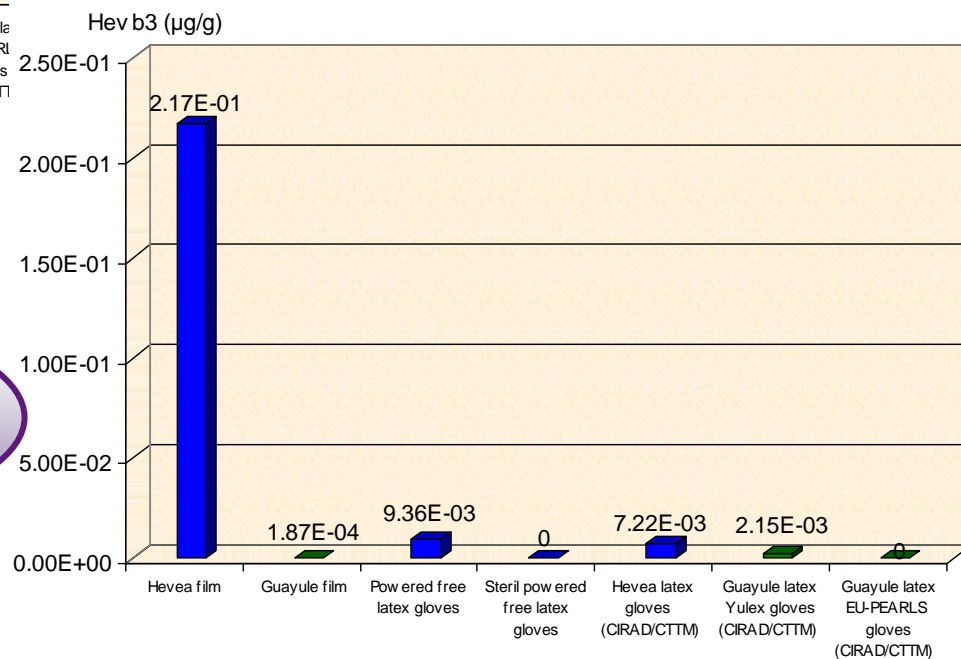
Protein quantity in guayule films are 115 times lower than in hevea films and 9 times than in medical gloves
Gloves made with commercial guayule latex contain less protein than hevea prototype gloves.
Gloves made with CIRAD guayule latex contain large protein amounts

Determination of allergen content in films and gloves extracts

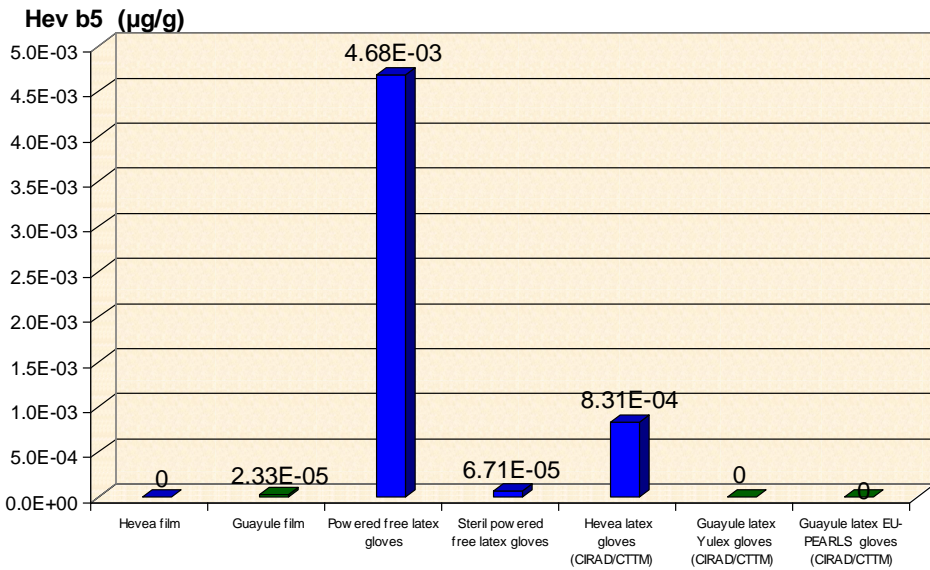


Allergen Hevb1 is present in the hevea films and in small amount in guayule extracts from films and gloves

Allergen Hevb3 is present in the hevea films and in small amount in medical gloves and guayule gloves made with commercial latex

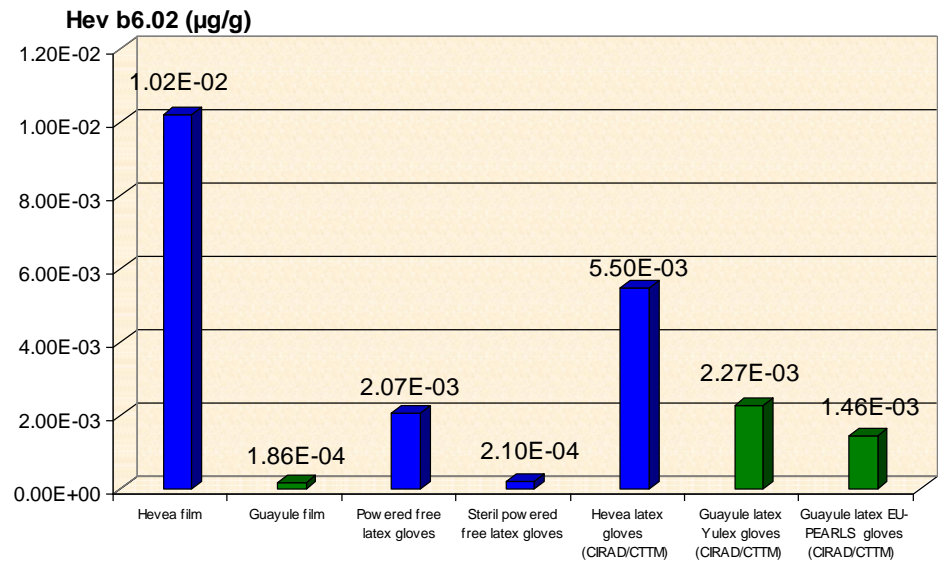


Determination of allergen content in films and gloves extracts



Allergen Hevb5 is present in the hevea gloves

Allergen Hevb6.02 is present in the hevea films and gloves but also in guayule films and gloves



Identification of proteins in guayule films extracts

Using WB and labelling with anti-hevea Mabs (Hevb1,Hevb3,Hevb5 and Hevb6.02)

Hevb1 and Hevb6.02 were detected in guayule films extracts

Using LC ESI MS/MS mass spectrometry: collaboration with INRA

Some hevea allergens were identified

Rubber elongation factor **Hevb1**

Glucan endo1,3 beta glucosidase: **Hev b2**

Hevamin A : **Hev b14**

Pro-Hevein: **Hev b6.01**

One guayule protein was identified

Allene oxyde synthase

Conclusion

Protein quantity in guayule films is about 100 times lower than in hevea films
Only Hevb1 and Hevb6.02 were detected in guayule films using Fit Kits

Gloves made with commercial guayule latex contain less protein than hevea gloves
But, gloves made with CIRAD guayule latex contain large protein amounts

Small amounts of Hevb1, Hevb3 and Hevb6.02 were detected in guayule glove prototypes

Using mass spectrometry, four hevea allergens were found in guayule film extract
Hevb1, Hevb2, Hevb14 and Hev b6.01

We detected Hevb6.02 (hevein) by ELISA or Hevb6.01 (pro-hevein) by MS

Identification of a guayule specific protein (*Parthenium argentatum*) : Allene oxyde synthase





Thank you for your attention

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