Introduction

Indonesia is one of the biggest natural rubber producers in the world. Indonesia has about 3,338,162 hectares of rubber plantation. Besides producing latex, the rubber plantations produce also about 1500 kg/hectare of rubber seeds, which has not been utilised optimally. Rubber seed oil may be able to be used for chamois leather tanning.

Chamois leather is a popular leather article in the market, as it has unique uses, such as in high quality gasoline filtration and cleaning of optical equipment (spectacles, windows, vehicle, jewellery, silverware, etc.). In this research, the use of rubber seed oil for chamois tanning was investigated. The objectives of the research were to discover whether the rubber seed oil could be used as chamois leather tanning agent, and to identify chemical, physical as well as organoleptic properties of the rubber seed oil tanned leather. This study shows that the chemical, physical, and organoleptic properties of rubber seed oil tanned leather were similar to those of fish oil tanned leather. In terms of colour and odour, rubber seed oil tanned leather was better than fish oil tanned leather.

Materials and methods

Materials and equipment

Materials used in the research were pickled sheep skin, rubber seed oil, fish oil (as a control), sodium chloride, Relungan GT (50% glutaraldehyde, BASF), sodium formate, sodium carbonate, and Eusapon S (Wetting/degreasing agent, BASF). The equipment used included an hydraulic press, tanning drum, stacking, paddle, shaving machine, toggle dryer, buffing machine, pH meter, shaker, grinder, burner, tensile strength meter, Kubelka glass apparatus, and Fourier Transform Infra Red Spectrophotometer (FT-IR).

Method

Oil Extraction

The seeds were sun dried for 3 days, 5 hours each day, and then were dried in an oven at 70°C for 1 hour. Oil was extracted by using a hydraulic press at 65°C. The yield of oil was approx. 10% for whole seeds or 20% for endosperm only.

Oil Analyses

Colour, density, iodine value, acid value, free fatty acid content, peroxide value, and saponification value of rubber seed oil and fish oil were measured. The colour of the oils was measured by using a DI 2000 spectrophotometer at wavelength of 455nm. A pycnometer was used to measure the density of the oils. Iodine value was analysed using Wij's method. Acid value was measured using the AOAC method.