

### Soy-based plywood glue

'Foaming soy adhesives could help soybeans bond with lumber industry' is the title of the news published by Linda McGraw in Agricultural Research wherein Milagros Hojilla-Evangelista (ARS research associate in Peoria, Illinois) work has been reported. It concludes that a new soy-based plywood glue stands ready to give the plywood industry what every industry wants i.e. faster production at lower cost. In this product soy is used to replace animal blood protein extenders in plywood glue formulas.

Soy flour, 22 cents per pound makes the best glue, and the glue ends up being 50 cents per 100kg cheaper than conventional formulations. Soy flour makes up 3.5 to 5.5% of the glue mix, with the adhesive resin being the primary component. It is reported that according to Hojilla-Evangelista, the amount of soy glue should be just right to produce a glue that will foam as well as conventional glue and, at the same time, be as adhesive. Other benefits of this foamed soy-based glue are that it requires less drying time, uses less water and produces less waste than other plywood glues [McGraw, *Agric Res*, 2001, **49**(1), 9].

### Lady's finger mucilage can be used as a binder in tablets

The scientists at the Department of Pharmaceutical Technology and Industrial Pharmacy and Pharmacognosy, University of Nigeria, Nigeria evaluated the binding properties of the mucilage from Lady's Finger (*Abelmoschus esculentus* Linn.) in sulphaguanidine (a poorly water soluble drug) granules and tablets relative to the binding properties of two standard binders: maize starch and gelatin. The gum or mucilage was employed at concentrations of 0, 2, 4 and 6% (w/w) and granules and tablets were prepared by the weight granulation method. Granules prepared with Lady's finger gum possessed good flow characteristics and the polymer exhibited higher binding capacity in sulphaguanidine tablets than maize starch and gelatin at equivalent concentrations. Thus the gum could be employed as a granulating agent in normal release sulphaguanidine tablets at concentration levels of 2 and 4% (w/w) (Ofoefule *et al*, *Indian J Pharm Sci*, 2001, **63**, 234-38).

## Insecticide/Pesticide/Molluscicide

### Creat as a herbal insecticide for pulses

During storage pulse grains are attacked by bruchid, *Callosobruchus chinensis* and its control through chemical pesticides has always been questioned for residual toxicity. Various plant powders and their extracts have been reported to possess insecticidal activity against bruchids. The Creat, *Andrographis paniculata* Nees is one such bitter annual herb claimed to possess active ingredients of insecticidal value.

Recently further investigations have been done to evaluate the efficacy of different solvent extracts of the leaves against the most serious post-harvest pest of stored pulse grains. A significant efficacy has been observed with respect to methanol and ethyl acetate extracts at the highest concentrations (1000 ppm) which leads to 72.01 and 67.69% adult mortality, respectively. The efficacy was dose dependent. The active ingredient, andrographolide has been isolated from the methanol fraction. Thus this herb has great potential for its inclusion in safe herbal insecticide for pulses (Bright *et al*, *Indian J Exp Biol*, 2001, **39**, 715-718).



*Andrographis paniculata* Nees



### *Thuja* essential oil against stored grains insects

The wood of *Thuja occidentalis* Linn. is resistant to insect attack and its essential oil is widely used as fumigant for stored product insects. Recently a study has been done on the effectiveness of its volatile oil alone or in combination with kaolin powder against cowpea weevil, *Callosobruchus maculatus* F. A suspension, called 'Kaolin milk' (pH 7.01) was prepared by crushing and boiling the kaolin lumps in distilled water. It was then filtered through a mesh sieve, fine steel gauze and a piece of cotton fabric. The resulting suspension was left undisturbed for 3 days. After draining off the water the particulates were recovered and left to dry in sun. Aromatisation of the Kaolin powder was done with the *Thuja* essential oil and stored in aluminium foil.

The experiment revealed that *Thuja occidentalis* essential oil has similar biological effects as tropical oils such as Ocimum oils on these stored product insects but is significantly more active and it did not affect cowpea germination (Keita *et al*, *Canad J Pl Sci*, 2001, **81**, 173-177).



*Thuja occidentalis* Linn.

## Livestock

### *Sodium chlorate kills Salmonella and E. coli*

Linda McGraw, USDA-ARS has reported that when fed in low doses, sodium chlorate kills *Salmonella typhimurium* and *Escherichia coli* in pigs and cows. The gut and lymph tissues of meat animals and chickens are major reservoirs for *Salmonella* and *E. coli* 0157:H7. The research work done by David J Nisbet offers a practical approach for reducing on-farm concentrations of these pathogens. These two bacteria are the main causal agent of food poisoning in human which costs a high price but the cost of using sodium chlorate at a meat processing facility could be less than 10 cents per pig (estimated by ARS microbiologist Robin C. Anderson). In Laboratory studies

45 weaned pigs were fed up to 0.04 gm sodium chlorate/kg of body weight after being infected with *S. typhimurium*. Within 16 hours the treatment produced a 150-fold reduction in the number of pathogenic cells in the intestines. Sodium chlorate can also be added to animals'

drinking water at slaughter house

[McGraw, *Agric Res*, 2001, **49** (3), 19].