

PAKISTAN JOURNAL  
OF  
SCIENTIFIC AND INDUSTRIAL RESEARCH

---

Vol. 4, No. 2

April 1961

---

**STUDIES ON ABRUS PRECATORIUS LINN.**

**Part I.—Isolation and Toxic Properties of “Abrulin” a Protein Fraction from the Seeds**

A. HAMEED KHAN AND MUMTAZ A. HASHMI, *Biochemical Research Division,*

AND

M. IKHLAS KHAN, *Drugs and Pharmaceutical Research Division,*

*Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi*

(Received April 11, 1961)

By fractional precipitation with ammonium sulphate, an active fraction, named Abrulin, has been obtained. The ultraviolet spectrum of this fraction resembles that of a typical protein with a minimum at 250 m $\mu$  and a maximum at 278 m $\mu$ . Abrulin is toxic towards albino mice in an amount as small as 1  $\mu$ g. The toxicity of abrulin against four other laboratory animals, i.e., rat, rabbit, guinea pig and cat, has also been studied. Its activity is generally found to be much higher than previously reported.

## PREPARATION OF STABLE METALLIC SOAPS OF ROSIN ACIDS AND THEIR DERIVATIVES

MOHAMAD ASLAM AND ASHHAD MEHDI

*Paints and Plastics Research Division, Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi*

(Received February 15, 1961)

This paper deals with the preparation and properties of stable rosinates of aluminium, cadmium, cobalt, copper, lead and zinc by (i) double decomposition using abietic acid, Rosin WW, Rosin FF, oxidised rosin and abietic acids, and (ii) fusion method using rosin oil having different acid values. It has been found possible to prepare satisfactorily stable unmodified rosinates if the acid is not allowed to get oxidised prior to use and is taken up in the solvent as soon as precipitated in a hydrated form. The stability also depends on the nature of the metal and the order of metals for stability is manganese, cobalt, aluminium, cadmium and copper. **Most stable and concentrated solutions however are obtained by fusion method using metallic acetates and rosin oil having acid value from 0 to 80.** Rosin oil of higher acid values does not give satisfactory results and in case of aluminium, cobalt and zinc shows blocking tendencies.

**PROPERTIES AND APPLICATIONS OF BETULIN-BASED ROSIN ESTERS**

MOHAMAD ASLAM AND KHURSHID ALAM

*Paints and Plastics Research Division, Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi*

(Received February 21, 1961)

It has been observed that rosin can be esterified with betulin which is obtained by crystallisation from the extract of the bark of the *Betula utilis*, known locally as 'bhoj putr' or 'khadang'. To make the processes economically feasible, the extract as such has been successfully used for the preparation of betulin-based rosin esters. These resins are superior to ester gum in all respects and compare favourably in performance with pentaerythritol ester. The water resistance properties of varnishes based on the new esters prepared from the extract of bark as such is excellent.

**INDIGENOUS BENTONITES FOR REFINING COTTONSEED OIL**

NASIR-UD-DIN ZAHID, M. K. BHATTY AND KARIMULLAH

*West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore*

AND

R. A. SHAH

*Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi*

(Received April 11, 1961)

Indigenous bentonites have been studied for refining cottonseed oil. Three different processes, i.e., (i) heat treatment, (ii) acid treatment and (iii) salt treatment have been employed for activation of the bentonites. Semi-refined cottonseed oil of colour index (Lovibond scale) 9.0 yellow units was treated with various activated bentonites. Maximum decolorization of the oil achieved from such a treatment was up to 85%.

**PHOSPHATASE ACTIVITY IN DIFFERENT LIFE STAGES OF THE STABLE FLY,  
STOMOXYS CALCITRANS (L.)\***

SHAHID H. ASHRAFI

*Drugs, Pharmaceuticals and Pesticides Research Division, Central Laboratories, Pakistan Council of Scientific  
and Industrial Research, Karachi*

AND

FRANK W. FISK, *Ohio State University, Columbus, Ohio, U.S.A.*

(Received March 24, 1961)

Acid phosphatase activity during the study of different life stages of the stable fly, *Stomoxys calcitrans*, was found highest in eggs, and a second peak was noted in pupae. Three-day-old males and females showed the same level of acid phosphatase activity. The lowest activity was found in two-day-old larvae.

Similarly alkaline phosphatase activity was found highest in the egg stage. The lowest activity was found in two-day-old larvae, but this alkaline phosphatase activity was higher than that of acid phosphatase in the same stage. Again, alkaline phosphatase activity was increased in seven-day-old larvae, and attained a second peak in pupae, then it decreased in three-day-old adults.

The varying amounts of acid and alkaline phosphatase activity in different life stages of the stable fly was definitely associated with tissue growth and differentiation.

## ROLE OF PHOSPHORUS IN THE GROWTH AND RESPIRATION OF TOMATO PLANTS

MAHMOOD AHMED AND RAFIQ AHMED

*Department of Botany, University of Karachi, Karachi*

(Received March 13, 1961)

Different levels of phosphorus were supplied to the tomato plants, growing in sand culture. Plants treated with 272 p.p.m. of phosphorus were growing healthy whereas 544 and 816 p.p.m. concentrations of phosphorus were found toxic and growth limiting.

Maximum rate of respiration was noticed in the plants growing in complete (normal) mineral nutrient solution containing 272 p.p.m. of phosphorus. A marked decrease in respiration rates was noticed if the concentration of phosphorus is changed from this critical level. The rate of respiration in minus phosphorus and minus half phosphorus plants were found nearly one-third in comparison with plants growing in complete solution. An increase in the concentration of the phosphorus above the critical level gradually lowered down the rate of respiration.

The effects were attributed to the key position of phosphorus in respiratory mechanism.

76

*Special Article*

**THE UTILIZATION OF SCIENTIFIC RESEARCH**

SALIMUZZAMAN SIDDIQUI, MAZHAR M. QURASHI AND A. H. CHOTANI

*Pakistan Council of Scientific and Industrial Research, Karachi*

(Received March 5, 1961)

**SHORT COMMUNICATIONS**

79

**BITTER PRINCIPLE OF SAXIFRAGA CILIATA**

SALIMUZZAMAN SIDDIQUI AND M. MANZUR-I-KHUDA

*Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi*

(Received February 20, 1961)



**STUDIES ON TROMBIDIUM TINCTORUM LINN.****Part II.—Chemical Constitution of the Non-Saponifiable Matter from the Fat of Trombidium Tinctorum Linn.**

SAHFIQ AHMAD KHAN, MUHAMMAD KHURSHID BHATTY AND KARIMULLAH  
*Oils, Fats & Waxes Research Division, West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore*

(Received April 5, 1961)

**UTILIZATION OF COTTONSEED FATTY ACID PITCH FOR THE  
PREPARATION OF BLACK STOVING ENAMEL**

MOHAMAD ASLAM AND G. MUSTAFA ALI

*Paints and Plastics Research Division, Central Laboratories, Pakistan Council of  
Scientific and Industrial Research, Karachi.*

(Received February 28, 1961)