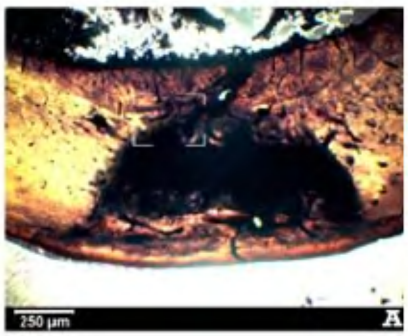
In this issue

Cementing bone defects

Calcium phosphate cements (CPCs) are considered as new-generation materials in the field of skeletal repair. These are water-based inorganic cements, which upon setting, get converted to calcium hydroxyapatite, the mineral part of vertebrate bone and teeth. Because of the unique combination of mouldability, biocompatibility and osteoconductivity, CPCs are highly valued for the reconstruction of bony/dentinal defects.



Fernandez *et al.* (**page 1678**) describe a new calcium phosphate cement product 'Chitra-CPC'. The study compiles the safety and efficacy evaluation of Chitra-CPC, carried out as per the International Standards. A battery of material safety tests (for acute systemic toxicity, intracutaneous reactivity, pyrogenic substance and maximization sensitization) has been carried out in animals. The soft tissue response was tested by muscle implantation in rabbits. The results showed excellent biocompatibility.

The efficacy of Chitra-CPC to heal bone defects was investigated by implanting in rabbit femur with hydroxyapatite ceramic granules as the control, up to a period of 1 year. It was found to resorb progressively allowing simultaneous new bone formation, the ideal characteristic of a bone defect repair material. Chitra-CPC will find its use as bone graft extender and void filler in orthopedics and as repair material for endodontic and periodontal defects in dentistry.

Genetic transformation of Nagpur mandarin

Citrus is an important fruit crop of India; however it is continuously being threatened by different biotic and abiotic stresses. Hence, genetic transformation can be employed to bring about the desired changes especially in the popular indigenous cultivars like Nagpur mandarin. To introduce these novel gene(s), it is imperative to standardize the protocol for genetic transformation using *Agrobacterium tumefaciens* harbouring the gene of interest followed by its confirmation. Khawale *et al.* (**page 1700**) have developed a protocol for genetic transformation using *Agrobacterium tumefaciens* strain EHA105 harbouring binary vector pBI121 along with *uidA* (GUS) and *nptII* genes using cotyledon segments as explant in Nagpur mandarin. The transformation frequency was over 30% and putatively transformed plants were confirmed by GUS assay and histochemical assay. Transformation was confirmed by PCR analysis and the integration of T-DNA into nuclear genome of transgenic plants following Southern hybridization with α-^{32}P labelled riboprobes for the GUS gene.

Spongy tissue in Alphonso mango

Alphonso mango, the premium Indian mango cultivar, suffers from a serious physiological disorder known as 'Spongy tissue' or 'internal breakdown' in ripe fruits. The disorder is characterized by the spoilage of pulp close to the stone with an off-flavour, rendering it unacceptable for consumption and severely affecting the valuable export earnings to the country's exchequer. Fruits affected by this disorder do not show any external symptoms and the malady is detected only after the fruits are cut open, posing a challenge for local and international marketing of high quality fruits free from spongy tissue. The problem remained an enigma despite extensive investigations in the past. Ravindra and Shivashankar (**page 1712**) describe the identification of the cause of spongy tissue in 'Alphonso' mango to the shift of recalcitrant seed into germination mode and the consequential drain of water from the adjoining mesocarp during fruit maturation and ripening phase. A significant decrease in spongy tissue incidence by pre-harvest application of paclobutrazol (anti-gibberellin and a growth retardant) and an increase with GA_3 (germination promoter) as compared to control, clearly indicated the central role of seed in spongy tissue formation. Absence of spongy tissue in Alphonso mango fruits naturally infested with mango stone weevil (*Sternochetus mangiferae*), where funiculus and/or embryonic axis were found damaged by the random feeding activity of weevil provided evidence supporting the causative role of seed in formation of spongy tissue.