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## New prototype of expandable stent valve of polyurethane, implanted by catheter for pediatric patients

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**Introduction:** The biological cardiac prostheses still not the ideal replacement valve for pediatric patients due to early calcification and exposing the patient to multiple valve replacements.

**Objectives:** Develop a prototype expandable stent valve polyurethane for transcatheter implantation in sheep, undergoing expansion during the postoperative follow-up. The diameter of the expandable stent valve may be accomplished through the use of balloon catheter.

### Material / Methods:

**Prototype:** The first step: will be built expandable stent valve chrome cobalt, with a diameter of 22 mm. This step will be performed in collaboration between Universidade Federal de Sao Paulo (UNIFESP) and Bentley - InnoMed - Germany. In the second step: is constructed of 3 polyurethane leaflets, at UNIFESP Lab.

**The third step:** Ligation of the stent valve in the catheter balloon, after hydrodynamic studies and submitted to valve clipping, reducing the diameter of 22 mm to 4.2 mm (13 FR). The sterilization is performed by gamma radiation.

**Experimental Surgery:** The prosthesis was implanted in the pulmonary position in 14 sheep 4-6 months old and weighing 20 to 30 kg, using a transcatheter technique. In seven sheep will be expanded up to 22mm and in the remaining 7, expanded up to 18mm in diameter.

**Results:** Follow-up after surgery. All experimental animals will be treated with antiplatelet agents. The period of postoperative follow-up will be 6 months. In the third month after surgery will undergo to Doppler echocardiography. The 7 sheep with stent diameter of 18 mm, will undergo dilation using balloon catheter. In the sixth month postoperatively, the sheep will be subjected to euthanasia and explantation of the prosthesis for histopathology.

**Discussion:** Experimental studies valve polyurethane published showed good hemodynamic performance, low incidence of calcification and fatigue resistant. The expandable stent has advantages because you can change the diameter of the stent, using a balloon catheter, after the development of the child.

**Conclusion:** The valves can be expanded with the growth of the patient, reducing the need for surgery for valve replacement and improving the quality of life of patients.

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## Subacute administration of crude khat (*Catha edulis* F.) extract induces mild to moderate nephrotoxicity in rats

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Although various studies have been conducted to shed light on the pharmacological actions of khat, little or no data available regarding khat's effect on the renal redox system. The aim of this study was therefore to investigate the potential of nephrotoxicity associated with khat exposure in rats. Sprague Dawley rats were randomly assigned into eight experimental groups. Animals were treated with Tween80, gentamicin 100 mg/kg and khat at various doses (100, 200 and 400 mg/kg) alone or in combination with gentamicin for ten days. The animals were then sacrificed to obtain blood and renal tissues for subsequent analysis. Renal markers, including creatinine, blood urea nitrogen, antioxidant enzymes as well as markers for lipid peroxidation were determined using established protocols. In addition, histopathological changes were evaluated with hematoxylin and-eosin staining technique. Lower and moderate doses of khat did not alter the measured parameters compared to controls. By contrast, higher dose (400 mg/kg) of khat not only increased levels of serum creatinine and blood urea nitrogen ( $p < 0.001$ ) but also levels of malondialdehyde ( $p < 0.01$ ). Moreover, 400 mg/kg of khat significantly decreased enzymatic activities of superoxide dismutase ( $p < 0.01$ ) and catalase ( $p < 0.001$ ). When khat was administered with gentamicin, it was again the higher dose that significantly accentuated gentamicin-induced alterations in the renal system.

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