ing concentrations of the leaf extract of *B. frutescens* and *natalensis*. These cultures were then subjected to MTT, WST-1 and BrdU tests to determine the cytotoxicity and proliferation effect of the extracts. The effect of the extracts on cell migration was tested using the 'scratch assay'. In addition, migration of cells across a score was analysed over a 48 hour period

Cell proliferation was present at all concentrations of *B frutescens* and *natalensis*. Proliferation in the treated cultures was significantly greater than control cultures at concentrations of 0.1-5 and 100-300 µg/ml for *Bulbine natalensis* and at concentrations of 0.1-10 µg/ml for Bulbine frutenscens. Both extracts exhibited no cytotocity. The average time to close the 'score' was 37, 46 and 48 hours for the *Bulbine natalensis, Bulbine frutescens* and the control cultures, respectively.

These findings have important implications for the use of these extracts to treat wound healing. The *in vivo* effect of the extracts has been tested on an animal model and the histology assessed.

Hutchings A (1996) Zulu Medicinal Plants: an Inventory. University of Natal Press, Scottsville.
Van Wyk B-E, Gericke N (2000) People's plants. A guide to useful plants of southern Africa. 1st edition. Briza Publications, Pretoria
Van Wyke B-E, Van Oudsthoorn B Gericke N (2002) Medicinal plants of South Africa, 2nd edition, Briza Publications; Pretoria
Xue M, Thompson P, Kelso I, Jackson C (2004) Activated protein C stimulates proliferation, migration and wound closure, inhibits apoptosis and upregulates MMP-2 activity in cultured human keartinocytes. Exp Cell Res 299:110-127.

*Corresponding author
E-mail: Pather@wits.ac.za

Anatomo-histological analysis of the juncturae and their relations to the extensor tendons to the dorsum of the hand

Y Pınar[1]*, O Bilge[1], F Govsa[1], S Celik[1], H Aktug[2]

[1]Department of Anatomy, Faculty of Medicine, Ege University, Izmir, Turkey, [2]Department of Embryology and Histology, Faculty of Medicine, Ege University, Izmir, Turkey

The extensor digitorum communis (EDC) tendons emerge through the fourth dorsal companent onto the dorsum of the hand, they are together distally by an oblique interconnections, juncturae tendineum (JT). The JT may play coordination of extension of hand, force redistribution, stabilization of the metacarpophalangeal joint.

The JT were studied for gross appearance, size, shape, thickness, location and distribution with the dorsum of the hand in fifty-four cadavers. The JT were recorded to the adjacent tendons of origin and insertion, the distance from the radiocarpal joint, and by the intermetacarpal (IMC) space. The first IMC space was defined as the space between the metacarpals to the trumb and index fingers, and second, third and fourth spaces were between the index and long, long and ring, ring and small fingers, respectively. Measurements for the morphological different types of JTs were recorded to the nearest 0.01 mm and were statistically analyzed using Student's t test. After standart tissue processing, the sections were embedded in paraffin and cut at 5µ thickness to the JT stained with hematoxylin-eosin and Masson trichrome.

The JT were identified into three groups their anatomo-histological features. The JT type 1 was consisted of filamentous regions within the intertendinous fascia that contained tiny bands of connective tissue. It was found primarly between EDC tendons to the index and middle fingers and between the tendons to the middle and ring fingers. This type of JT was observed present in 57.4% cases in the second IMC, in 16.7% cases in the third IMC and 1.8% cases in the fourth IMC space. The JT type 2 was found thicker than type 1 JT, yet thinner than type 3. This type of JT was detected present in 3.7% cases in the second IMC, 59.3% cases in the third IMC and in 7.4% cases in the fourth IMC space. The JT type 3 is decribed the longest and thickest of the three types. Type 3 JTs were subclassified into two subtypes as "Y" and "r" depending on their appearance. The type of 3Y was accounted for 14.8% JT in the third IMC space and 53.7% JT in the fourth space. The type of 3r was detected present in 5.55% cases in the third IMC and in 37% cases in the fourth IMC space. In histologic examination, the fibers of Types 1 and 2 JTs were straight. In Type 3 JTs were composed of regularly oriented parallel and crosswise bundles of tendineous tissue.

This study is important in terms of giving accurate knowledge on the anatomo-histological analysis of the JTs and their relations to the extensor tendons to the dorsum of the hand. Difference of histological features of the JT were not described in the classification of previous studies of JTs. An understanding of the structures of the JT and interactions between the

tendons of the fingers is of importance in hand assessment, during reconstructive procedures such as considering tendons for transfer.

El-Badawi MGY, Butt MM, Al-Zuhair AGH, Fadel RA (1995) Extensor Tendons of the Fingers: Arrangement and Variations-II. Clin Anat 8:391-398.
Hirai Y, Yoshida K, Yamanaka K, Inoue A, Yamaki K, Yoshizuka M (2001) An anatomic study of the extensor tendons of the human hand. J Hand Surg [Am] 26(6):1009-15.
Kitano K, Tada K, Shibata T, Yoshida T (1996) Independent index extension after indicis proprius transfer: excision of juncturae tendinum. J Hand Surg [Am] 21(6):992-6.
Ogura T, Inoue H, Tanabe G (1987) Anatomic and clinical studies of the extensor digitorum brevis manus. J Hand Surg [Am] 12(1):100-7.
Paley D, McMurtry RY, Murray JF (1987) Dorsal dislocation of the ulnar styloid and extensor carpi ulnaris tendon into the distal radioulnar joint: the empty sulcus sign. J Hand Surg [Am] 12(6): 1029-32.
Rockwell WB, Butler PN, Byrne B. (2000) Extensor tendon: Anatomy, injury, and reconstruction. Plast Reconstr Surg 106: 1592-1603.
von Schroeder HP, Botte MJ (1993) The functional significance of the long extensors and juncturae tendinum in finger extension. J Hand Surg [Am] 18(4):641-7.
von Schroeder HP, Botte MJ, Gellman H (1990) Anatomy of the juncturae of the hand. J Hand Surg 15A:595-602.
Tan ST, Smith PJ (1999) Anomalous extensor muscles of the hand: a review. J Hand Surg [Am] 24(3):449-55
Zilber S, Oberlin C (2004) Anatomical variations of the extensor tendons to the finger over the dorsum of the hand: A study of 50 hands and a review of the literature. Plast Reconstr Surg 113:214-221.

*Corresponding author
E-mail: yeldapinar@gmail.com

Expression of calcium-binding proteins in the proliferative zones around the cortico-striatal junction of rabbits during pre- and postnatal ages

C Reblet*, A Alejo, T Fuentes, P Pró-Sistiaga, JL Mendizabal-Zubiaga, JL Bueno-Lopez

Department of Neurosciences, School of Medicine and Dentistry, The University of the Basque Country, Leioa (Vizcaya), Spain

Herein we asked whether cells expressing calcium-binding proteins around the cortico-striatal junction are of pallial or subpallial origin. Brains of rabbit embryos between E18-E28 and postnatal P0-P22 were immunoreacted with monoclonal antibodies raised against calretinin, calbindin and parvalbumin. At E18-E21, calbindin-and calretinin-immunoreactive cells were seen in distinct proliferative zones in the vicinity of the cortico-striatal junction. Whereas calbindin-immunoreactive neurons were in the ventricular zone of the ventral pallium (the medial wall of the lateral ventricular angle), calretinin-immunoreactive cells were, nearby, in the subventricular zone of the subpallium at the lateral edge of the lateral ganglionic eminence. From E25 to P22, both, calbindin- and calretinin-immunoreactive cells appeared in the pallial ventricular and subventricular zones around the lateral ventricular angle. Some of these cells resembled migratory neuroblasts. Parvalbumin-immunoreactive cells appeared at P5-P10, albeit they were almost negligible in the proliferative zones around the cortico-striatal junction and the lateral ventricular angle. The results suggest that a number of the calbindin-expressing neurons that are generated in mid-gestation and postnatally are of pallial origin. They also indicate that only a few of the late-generated calretinin-immunoreactive cells may have a pallial source. The origin of the parvalbumin-immunoreactive cells was not ascertained in the present study.

Supported by: UPV/EHU 12090/2000, MYCT 13338/2001, PB 0624-01.

*Corresponding author
E-mail: concha.reblet@ehu.es