Kumkum- A Naturally Available Substance with a Dual Role in Histostaining of Oral Tissues

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Abstract

Histological staining involves a series of processes that help in the preparation of sample tissues to facilitate microscopic study. Majority of the currently employed stains are chemically synthesized that are rapid, economical and impart wide variety of colors. However, these dyes are harmful to the human tissues and cause skin allergies due to the production of toxic waste products during prolonged exposure. Hence, there is a need for naturally available substances to prevent their harmful effects. Recently, researchers have examined the potential use of natural substances like curcumin, beetroot, ginger, pterocarpusosun, rose, henna, hibiscus sabdariffa, etc. in staining tissues & microbes. Kumkum is one such substance, which has been minimally used for staining oral tissues. The purpose of the study is to evaluate the efficacy of natural substance- kumkum in staining the biopsied oral tissues. Methodology& Theoretical orientation:A cohort study that used 60 formalin fixed paraffin embedded soft and hard tissue specimens from institutional archives were subjected to sectioning and stained using kumkum and could be appreciated better in kumkum stained slides thereby rendering a special staining property to Hematoxylin & Eosin (H&E). The slides were evaluated for their staining efficacy and results were statistically analyzed using Wilcoxon sign rank test and independent't' test. Findings: : The mean of the overall parameters assessed for staining efficacy did not show statistically significant difference between the study groups in normal and pathological specimens for tooth (p=0.410 & 0.484), bone (p=0.133 & 0.157) and soft tissues (p=0.186 & 0.113) respectively. This suggests that kumkum staining efficacy is equivalent to that of routine H&E for oral tissues. However, structures like dentinoenamel junction, dentinal tubules and incremental lines of cementum in tooth specimens; and structures in alveolar bone like reversal and resting lines, canaliculi, mature and immature bone could be appreciated better in kumkum stained slides thereby rendering a special staining property to kumkum stain. Conclusion & clinical significance: To our knowledge this study is the first of its kind to have used kumkum stain obtained from Curcuma Aromatica for the differentiation of the components of tooth, bone and soft tissue structures in histostaining of oral tissues.The naturally prepared Kumkum stain possesses dual staining property both in routine and differential staining. This facilitates diagnosis of fibro-osseous lesions, bony, collagen and muscular pathologies. The natural stain also finds application in forensic odontology for age estimation..

Biography:

Lavanya Mallika completed her MDS in Oral and Maxillofacial Paathology in M.S. Ramaiah University of Applied Sciences, Bangalore, India.

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