Histopathology Staining and Cytopathology Notes

STAINING METHODS

- Indirect method:
 - Action of the dye is intensified by either a mordant or accentuator
 - Mordant: bridge or link between the tissue & dye
 - Mordant + dye = lake
 - Lake + tissue = tissue-mordant dye complex
 - Example: potassium alum with hematoxylin in Erlich's hematoxylin
 - Accentuator: not essential to the chemical union of the tissue and dye
 - -Does not participate in the staining reaction
 - Speeds up reaction (increasing staining power)
- Direct Staining:

- Giving color to the sections by using aqueous or alcoholic dye solutions

- Example: methylene blue, eosin, etc

Progressive staining:

neuropathological studies

- Follows a definite sequence

- Applied in a specific period (timed) or until the desired intensity of coloring of different tissue elements

- No decolorization/differentiation or washing

3. Best Carmine (Carmine +	
Alum. Chloride) – used for	
demonstration of Glycogen	
Orcein – From Lichens,	
Recommended for	
dermatological studies	
Saffron – From plant Crucos	
sativus. Has culinary and	
medicinal properties.	

Routine H and E Staining (Regressive type staining)

Chamical/Research	Duration		
Gilelingal/ Keagent			
Xylene I	5 minutes (book: 3 minutes)	Results:	
Xylene 2	5 minutes (book: 3 minutes)		
100% Ethanol	2 minutes	Nuclei: Plue to blue	
80% Ethanol	2 minutes	Nuclei: Blue to blue	
50% Ethanol	2 minutes	black	
Water	10 dips		
Hematoxylin (HARRIS)	5 minutes	Karyosome: Dark blue	
Water	10 dips		
Acid Alcohol	1 quick dip	Cytoplasm proteins in	
Water	10 dips		
Ammonia water	1 to 2 dips or until blue (book: 5 minutes)	edema fluid: Pale pink	
Water	10 dips		
Eosin	5 dips (book: 5 minutes)	Calcium and calcified	
Water	10 dips bone: Purplish blue		
80% Ethanol	2 minutes		
100% Ethanol	2 minutes	Musele fiberer door	
Xylene 1	2 minutes	wuscie iibers: deep	
Xylene 2	2 minutes	pink	
	Lat day		

STAINS

Alum Hematoxylin

	entiation of washing	Ehrlich's solution	 Natural ripening (2 months):
Natural Dyes	Synthetic Dyes	(ESI2)	Chemical ripening with
Hematoxylin - extracted from	- A.K.A "Coal tar dyes"		• Bouossivo staining à for
heartwood of the Mexican	- Derived from benzene		
tree (<i>Hematoxylin</i>	and collectively known as		Celuic tissues
Campechianum)	aniline dye	Dete Citil	Netural rise size 4 C
		L C Suit	 Natural ripering: 4- 6
1.) Aluminum Hematoxylin –	Chromophore –		monuns Circiler les souite with
Used in routine H and E,	Responsible for the	sh l	 Similar longevity with Exhlights homotopyilin
produces good nuclear stain	coloring on the dye, imparts		Erniich's nematoxylin
Mordant: Potassium	Contemporarily		
aluminum sulfater	1. Quinoid rin	Harris solution	mercuric chloride
PIC	2. Azo ring		For routine nuclear staining
2.) Iron Hematoxylin – used as	3. Xanthene		Extoliative cytology and
oxidizing agents and mordant	4. Quinone-imine group		stain for sex chromosomes
3.) Tungsten Hematoxylin –		Mayer's	 sodium iodine
Mallory's PTAH (for staining		hematoxylin	 Short staining time
muscle striations, fibrin, and			 Short storage
glial fibers			
		Cole's Hematoxylin	 alcoholic iodine
4.) Copper Hematoxylin –			 Used after Celestine blue
Used for study of			
Spermatogenesis		Carazzi's	 potassium iodate
		hematoxylin	 Short staining time
Cochineal Dyes – From female	Auxochrome – Responsible		(progressive staining)
Coccuc cacti	for the dyeing property of		 Does not stain cytoplasmic
Carmine – Chromatin stain	the dye, imparts color		organelles
Derivatives:	almost permanently		
1. Mucicarmine (Carmine +	1. Cationic Auxochrome:		
Alum. Hydroxide) –	Amino group		
demonstration of mucins and	2. Anionic Auxochrome:		
C. neoformans	Hydroxyl and Carboxyl		
	Groups		
2. Picrocarmine (Carmine +			
Picric acid) – For			