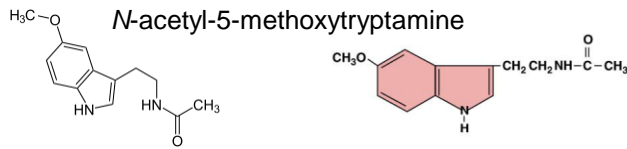
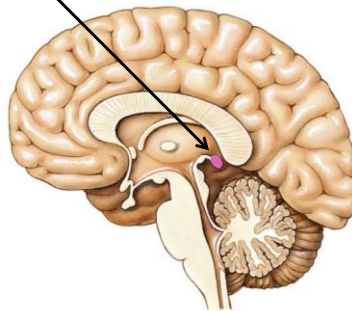


Melatonin

Chapter 20 Lecture 22



secreted by pineal gland (effector organ of autonomic nervous system)



Melatonin Hypothesis

Descartes (philosopher): “seat of the soul”

– deeply recessed under cerebrum

Heubner: precocious sexual maturity in young boy whose pineal gland destroyed by tumor

Holmgren: elasmobranchs: sensory-like retinal cells

Reptiles: “third eye”

mammals: vestige of the reptilian third eye

human pineal gland may become calcified early age

correlation with human reproductive function

McCord & Allen: pineal extracts → tadpoles blanch or transparent

Lerner 1957: factor responsible for vitiligo (white patches of skin)

isolate extract → indoleamine substance → melatonin

Reproduction

continuous darkness

gonad maturation in rodents delayed
overcome by pinealectomy

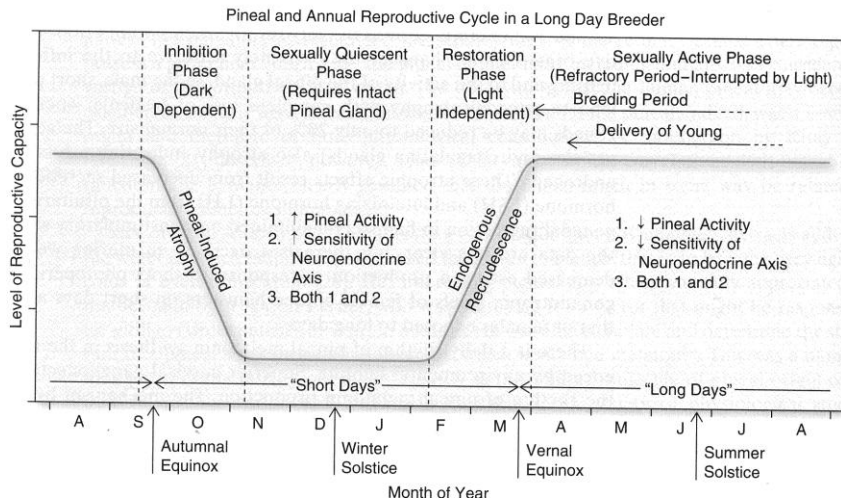
continuous light

early onset of sexual development
rapid gonadal weight
size ↑ & function of pineal gland
↓

antigonadotropic hormone??

both stimulatory & inhibitory
physiological
species specific
pattern of release

short duration nocturnal melatonin summer months
stimulatory hamster but inhibitory in sheep
long duration nocturnal melatonin winter months
inhibitory hamster but stimulatory in sheep

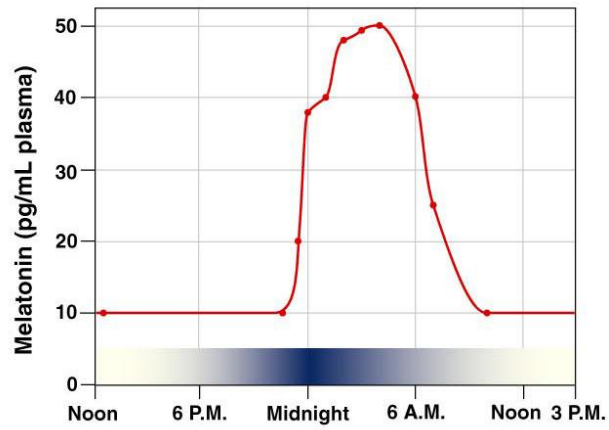


circadian rhythm

photoperiod

light inhibits secretion by pineal gland

dark stimulates secretion by pineal gland



night shift workers

antioxidant

jet-lag syndrome