Adrenal Physiology (EXTRA Questions)

Group	Question	Answer
A	**Define chromaffin cells?**	Modified postganglionic sympathetic neurons in the adrenal medulla
	What is the difference between epinephrine and norepinephrine?	Same but epinephrine has a methyl group.
	True or false : A) Epinephrine effects are mediated exclusively by the sympathetic nervous system. B) The adrenal medulla is a modified part of the somatic nervous system.	A) False (Norepinephrine mediated directly by sympathetic NS & Epinephrine brought exclusively by the adrenal medulla) B) False (Correction : the autonomic)
	Why does the chemical transmitter of chromaffin cells said to be qualifying hormones instead of neurotransmitters ?	Because chromaffin cells after being stimulated by preganglionic fibers will release their chemical transmitters directly into the circulation unlike other ordinary postganglionic sympathetic neurons.
	What is the difference between the postganglionic neurons in the adrenal medulla and the ordinary postganglionic sympathetic neurons?	Adrenal : don't have axonal fibers on the effector organ And they release their chemical transmitters directly into the circulation.
B	**What is the effect of epinephrine on alpha one and beta two ?**	**Alpha 1 constriction and beta 2 dilation.** Eg. epinephrine **and** norepinephrine bring about generalized vasoconstrictive effect mediated by **α**1-receptor stimulation and epinephrine (only) promotes vasodilation of the blood vessels that supply skeletal muscles and the heart through **β**2-receptor activation.
	Norepinephrine affects beta 1 and alpha , those receptors are close to what ?	Post ganglionic sympathetic terminals.
	Which has more affinity towards the receptors , alpha and beta ?	**Epi - similar to all / Nor- more with alpha.** Norepinephrine has greater affinity than epinephrine for the **α** receptors, and both hormones have same potency at **β**1. Epinephrine **(α**1,**α**2,**β**1,**β**2) Norepinephrine (**α**1,**α**2,**β**1)
	Which hormone has exclusive effect on beta two receptors ?	Epinephrine.
	What are the effects of epinephrine on skeletal muscles ?	Breakdown of stored glycogen, releases lactate into the blood (muscle's glycogen cannot be converted directly to glucose) after that the liver remove lactate from the blood and convert it into glucose, so Epinephrine's action on on skeletal muscles indirectly help raise blood glucose level. Also vasodilation of skeletal muscle's blood vessels (grey : group c info)
C	**Epinephrine increases the level of blood fatty acids by?**	Promoting lipolysis.
	Catecholamine secretion by the adrenal medulla is controlled (entirely) by?	Sympathetic input, which is activated under conditions of fear or stress.

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	Explain the rule of epinephrine in glycogenolysis?	It increases blood glucose level by several mechanisms.It stimulates both liver gluconeogenesis and glycogenolysis also it stimulates glycogenolysis in skeletal muscles.
	True or false: Norepinephrine dilates respiratory airways?	False (Epinephrine) Because norepinephrine has no effect on β2-receptor.
D	**Different stressors can produce specific responses characteristic of that stressors; give examples on that ?**	1- Specific response to cold exposure : shivering & skin vasoconstriction. 2- Specific response to bacterial invasion : increase phagocytic activity & antibodies production.
	We experience different type of stressors; does our body respond to those stressors differently or similarly?	BOTH ! Our body have specific responses to some stressors and also there is a nonspecific generalized responses to all noxious stimuli called general adaptation syndrome.
	What is the major nervous stimulus in stress ?	Sympathetic stimulation.
	What are the types of stress ?	Chemical, physical, physiological, Emotional,infectious and Social.
E	**How can the body respond to stress?**	**By several hormones :** Epinephrine / CRH-ACTH-Cortisol (+) / RAAS (+) Glucagon (+) / insulin (-)
	Why is cortisol released as a response for stress?	Due to its **metabolic effects** : 1- breaking down fat and protein stores. 2- expanding carbohydrate stores & increasing availability of glucose. (For nourishment and repair)
	How are the blood pressure and blood volume maintained during stress?	Through an increase in **RAAS** & **Vasopressin** Activities. Also **Epinephrine** plays major roles in acting directly on the heart and the blood vessels to improve circulatory function.
	What are the 2 hormones that facilitate learning and behaviour?	ACTH & vasopressin

*Questions are based on this file (given by Dr. Abeer Al-Ghumlas)

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