

MCQs

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- 1- Hydrogen peroxidase true except:**
- Formed mainly in mitochondria
 - Has the shortest life span among other radicals
 - Cross the cell membranes and react with most of the cellular components
 - Its life span reaches up to 10 seconds
 - All of the above
- 2- Hydroxyl radical:**
- Owens the highest affinity and reactivity among oxygen species
 - Has shortest life span
 - Its effect is almost localized
 - Mitochondria is the most susceptible to oxidative hits
 - All of above
- 3- Singlet oxygen is found continuously as a result of skin irradiation in most of the oxygen containing compounds all over the cells. So it**
- Has a larger life span than superoxide
 - It attack membrane lipids and nuclear contents including nucleic acid
 - Its detrimental effect is limited to the mitochondria
 - All above
 - a & b is correct
- 4- At the cellular level the antioxidant defences are present in**
- The cell membrane (tocopherols)
 - The mitochondria (catalases)
 - The cytoplasm (superoxide dismutase and peroxides)
 - Nuclear (thioredoxin)
 - a, d are correct
- 5- The Epidermis is 90% cellular, while the dermis is only 20% cellular that is why (the incorrect answer is)**
- Epidermis is subjected to more endogenous oxidative stress. Since the active stratum malpighii contain the higher number of mitochondria than the upper part.
 - Epidermis is most susceptible to oxidative radicals from outside light and UVR
 - Possess the modest antioxidant mechanisms compared to other organs
 - The concentration of hydrophilic natural antioxidants show a gradual increase from basal layer to the stratum corneum
 - All of the above are true.
- 6- Superoxide dismutase (SOD) is a metal containing enzyme. That has**
- in human the copper-zinc SOD present in cytoplasm
 - Manganese's SOD in mitochondrial membrane
 - Iron-containing SOD not found in human
 - It converts Hydrogen peroxide to water and molecular oxygen
 - It converts hydrogen peroxide into water and molecular oxygen
 - All are correct
- 7- Peroxidases**
- Enzymes that decompose various peroxides (not only hydrogen peroxide)
 - It is found in skin in non-keratinized cells
 - Its activity detected in fibroblasts, mast cells and macrophages
 - Most of its activity is in the highly active basal cell layer of epidermis
 - a, b, c are correct
 - only a, c are correct
- 8- Glutathione is the major antioxidant in human body all of following is true except**
- found in both the epidermis and dermis
 - it is found in the cell phospholipid membrane
 - it acts before and sometimes within catalase as an assistance
 - composed of three enzymes – glutathione peroxidase, glutathione reductase, glutamic acid
 - glutathione system also include the amino acid, glycine, cysteine and glutamic acid
- 9- Regarding Thioredoxin reductase system which of the following is not true:**
- Acts like glutathione and contains an S.H.-group
 - Composed of thioredoxin, thioredoxin reductase and NADPH
 - Present in high concentration in the epithelial tissues, langerhans cells
 - Melanocytes contain both thioredoxin and thioredoxin reductase, while keratinocytes contain only thioredoxin reductase
 - It shares in transformation of ribonucleosides into deoxyribonucleosides and protects the cell from hydrogen peroxide attack.

10- The Lipo amide system

- a) Is a constituent of the mitochondrial dehydrogenase complex
- b) It is a form of lipoic acid, which is attached to a lysine side chain of the enzyme dihydrolipoyl transacetylase, lipoamide dehydrogenase and NADH.
- c) Can scavenge superoxides
- d) Reduce oxidized thioredoxin
- e) (c) is incorrect

11- Choose the best correct answer:

- a) The hydroxyl radicals is inactivated by thiol residues especially the glutathione
- b) skin ascorbic acid level is about 41 microgram per gram dry weight, present mainly in the dermal extracellular tissue
- c) the amount of allantoin in the body is a good indicator of free radical activity
- d) urate and uric acid are powerful radical scavengers especially the peroxy and alkoxy radicals
- e) all of above is correct
- f) a & c are correct

12- The fat soluble antioxidant vitamin A&E characterized by all of following except:

- a) Beta-carotene is a powerful free radical scavenger; it is more effective than vitamin E.
- b) Both Beta-carotene & vitamin E equal in their antioxidant activity though the plasma concentration of Beta-carotene is 10-100 folds lower than Vit.E
- c) There are more than 20 membrane receptors for vitamin A and its metabolites
- d) Skin concentration of both vitamin A and Beta-carotene range from 1.3-2.2 Mg/mg protein in the dermis, while in the epidermis the concentration of Vit. A is higher than beta-carotene
- e) Ubiquinone (CoQ) is one of the fat soluble nonenzymetic antioxidants

13- Tocopherols

- a) Vitamin E is a mixture of eight tocopherols, all of them biologically active, Beta tocopherol is the most important integral part of biological membranes and considered the most important containing structures. Anti-oxidants.
- b) In cell membrane the ratio of vitamin E to polyunsaturated phospholipids is 1:1000
- c) Skin also contain low concentration of vita-

min E ranging from 189-675mg/mg protein.

- d) All of above are correct
- e) Only b and c correct

14- In the Non-enzymatic antioxidant system the

- a) Ubiquinone is a fat soluble non-enzymatic antioxidants that present in a ketone form
- b) Ubiquinol is a fat soluble non-enzymetic antioxidants that present in alcohol form
- c) Both are an electron acceptors that transfer electrons from flavins to cytochromes in the mitochondria
- d) Ubiquinol protects the mitochondria against oxidative hits
- e) All of the above are correct
- f) None of the above are correct

15- Skin aging is a complex biological process affecting various layers which of the following is true:

- a) Dermal changes are more conspicuous because it affects the extra cellular matrix and fibers which constitute about 80% of the dry weight of the skin,
- b) Apoptosis is induced by UVA
- c) UVB lead to damage on the nuclear DNA
- d) Some of the aging syndromes has increased level of oxidized protein as well as altered enzymatic functions.
- e) All of the above are true
- f) Only a & d are true

16- The difference between intrinsically aged skin and photo aged skin is

- a) increased in incidence of developing malignancy in the latter
- b) excessive mutations and oncogenes or tumor occur more with intrinsically aged skin
- c) Mutation of P53 at dermoepidermal junction found more with photo aged skin.
- d) Higher configurational changes of protein structure in photo aged skin due to excessive protein oxidative attacks by UVR
- e) b is incorrect
- f) b and c incorrect

17- Which of the following is incorrect:

- a) Melanin is the main chromophore in the epidermis absorbing photons, with wave length from 210–340 nm.
- b) In porphyrias the molecules can absorb photons from light as their absorbing spectrum is about 410nm

- c) One of the finding in examination of vitiliginous interface and normal skin showed accumulation of extracellular granular material & basal vacuolation of pigmented skin during disease progression which might be due to thioredoxin reductase inhibition with eventual increase in the oxidative stress.
- d) Reduced intracellular catalase level was also found in vitiliginous skin
- e) All of the above are incorrect

18- All of the following used as topical anti-oxidant except:

- a) Alpha-glucosylrutin 1% and Ferulic acid 0.05% uses in prophylaxis against polymorphous light eruption.
- b) Aminophenol derivatives (O-aminophenol-4-methylphenol).
- c) Podophyllotoxin and isotretinoin
- d) Anthralin
- e) Biomelanin and synthetic melanin

19- Which of the following is not true concerning uses of Antioxidants for aging:

- a) CoQ10 (Ubiquinone) is decreased in aging skin, when topically applied it decrease the depth of wrinkles via suppression of UVA-induced collagenase activation.
- b) Lipoic acid (5% alpha lipoic acid) decreased facial wrinkles without short side effect
- c) Melatonin (N-acetyl-5-methoxytryptamine) when used topically alone or in combination with vitamin C & E can give good sun protection.
- d) Vit. C topically applied in the isomers form L-ascorbic acid and D-ascorbic acid penetrate directly into the dermis where collagen is synthesized
- e) Polypodium leucotomus an immune modulator is an immuno modulator used systemically, found to enhance the absorption of Ultraviolet light leading to acceleration of skin aging.

20- Choose the correct answer: Polypodium Leucotomus is

- a) A steroid sparing anti-inflammatory with antioxidant properties
- b) Found only in topical form
- c) It rises the minimal erythema dose (MED) and minimal phototoxic dose (MPD) in-vivo in human volunteers against UVA & UVB
- d) Its mechanism of action is similar to Tacrolimus on Atopic dermatitis
- e) All of above are correct

21- Procyanidin B5-3-gallate is

- a) a polyphenolic fraction of grape seed
- b) when used topically in a concentration of 0.5 to 1.5mg/mouse. application has anti-tumor promoting activity
- c) epigallocatechin gallate is another gallate plane extract tried topically, delays the onset on UV-induced skin cancer in mice
- d) silymarin is a flavinoid, prevents the oncogenic effect of cancer inducers (TPA & OA) in a dose dependent manner and if applied 6% topically before benzoyl-peroxide, neutralizes the neoplastic promotion effect
- e) all of the above are correct

22- Vit. C (Ascorbate) which of the following is incorrect:

- a) only in the isomer form D-ascorbic acid has the ability to absorb percutaneously
- b) found in a stable aqueous acidic formulation
- c) zinc and tyrosine helps to facilitate the absorption of Vit.C analogue in cellex-c
- d) it affects collagen synthesis in the dermis
- e) combined with topical sun screen

23- Dapson used as antileprotic action as well as:

- a) effective therapy in neutrophilic dermatitis through suppression of myeloperoxidase, lipooxygenase
- b) reduce the overall production of reactive oxygen intermediates
- c) shows some structural similarities to carotenoids and vitamin-A
- d) all of the above are correct
- e) non of the above are correct

24- Selenium:

- a) an essential trace element, is a component of the glutathione peroxidases
- b) a constituent of iodothyronine deiodinase and thioredoxin reeducates
- c) has an inverse relationship between selenium and cancer incidence (lungs, colorectum, prostate)
- d) all of the above are correct

19- e 20- c 21- a 22- c 23- d 24- d
 13- e 14- e 15- e 16- e 17- a 18- c
 7- e 8- b 9- d 10- e 11- e 12- d
 1- b 2- e 3- d 4- e 5- b 6- f