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SWAMY VIVEKANANDHA COLLEGE OF PHARMACY

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ANTIBIOTIC RESISTANCE



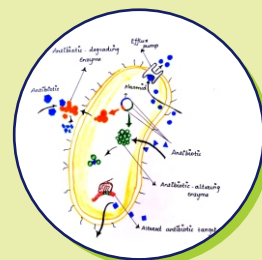
WHAT IS ANTIBIOTIC RESISTANCE ?

- ★ Definition : Antibiotic resistance refers to the ability of bacteria or other microorganisms to resist the effects of antibiotics, rendering them ineffective in treating bacterial infections.
- ★ Natural Selection : Antibiotic resistance occurs through natural selection. When antibiotics are used, they kill susceptible bacteria, but some bacteria with genetic mutations or acquired resistance genes survive and multiply.
- ★ Overuse and Misuse : The overuse and misuse of antibiotics in humans and animals contribute to the development of antibiotic resistance.
- ★ Healthcare - Associated Infections : Antibiotic-resistant bacteria are often associated with healthcare settings, where patients with weakened immune systems are more susceptible to infections.
- ★ Multidrug - Resistant Bacteria : Some bacteria have acquired resistance to multiple antibiotics, making them especially difficult to treat. These multidrug - resistant bacteria, such as methicillin - resistant Staphylococcus aureus (MRSA) and carbapenem - resistant Enterobacteriaceae (CRE), are a major concern in healthcare settings.



ANTIBIOTIC RESISTANCE A THREAT ?

- ★ Yes, antibiotic resistance is a significant threat to global public health. Antibiotic resistance occurs when bacteria, viruses, fungi, or parasites evolve and develop mechanisms to withstand the effects of antibiotics, rendering them ineffective in treating infections.



WHY ARE ANTIBIOTICS IMPORTANT ?

- ★ Antibiotic kill or inhibit the growth of bacteria helping us to treat both minor and serious bacterial infections.
- ★ There are used in all areas of medicine, and industry for the treatment of skin conditions such as acne. More serious infections like food poisoning or pneumonia and deadly contagious disease such as tuberculosis and meningitis.
- ★ It also stops wounds from getting infected after an injury or an operation and helps protect people with the damaged immune system such as patients undergoing cancer treatment or individuals who have recently received an organ transplant.
- ★ Alcohol triggers the side effects of certain antibiotics, and it can also make you dehydrated and affect your sleep.
- ★ These products can contain minerals - primarily magnesium, calcium, aluminum, iron or Zinc that bind to the antibiotic and keep from working. It forms a complex and decreases absorption.
- ★ When you take calcium rich foods with certain antibiotics like tetracyclines or fluoroquinolones, the medicine can bind to the calcium which prevents it from being absorbed by your body.
- ★ Citrus fruits and juices like Orange and grape-fruit, Soda, tomato products have a high acid content, which could decrease how much medicine is absorbed into your System for certain antibiotics.

PREVENTION OF COMMUNICABLE DISEASE

- ★ Cough or sneeze into your elbow or a tissue discard tissues immediately into a dustbin
- ★ Wash your hands often with soap water for at least 20 seconds especially after being in public blowing your nose, coughing or sneezing.
- ★ Avoid close contact and keep at least 2 meters from others whenever possible.
- ★ Don't touch your eyes, nose, or mouth
- ★ Clean and disinfect frequently touched surface especially when someone is sick.
- ★ Stay home if you are sick.



WHO Response

The Global action plan on antimicrobial Resistance has 5 strategies :

- ★ To improve awareness and understanding of antimicrobial resistance.
- ★ To strengthen surveillance and Research
- ★ To reduce the incidence of infection
- ★ To optimise the use of antimicrobial medicine.
- ★ To ensure sustainable investment in countering antimicrobial resistance.

If I have fever, Do I Always need an antibiotic ?

- ★ Fever is a common symptom for Infections and necessarily caused by bacterial infection.
- ★ Listen to your doctor for the recommended on the use of Antibiotics.
- ★ Do not demand your doctor to prescribe anti-inflammatory drugs or buy Antibiotics from the dispensary.
- ★ Yellow or Green nasal discharge does not necessarily indicate a bacterial infection.
- ★ Discharge becoming thicker and change colour during a common cold is quite normal.
- ★ Unreliable to consider treatment by the appearance of the discharge alone.
- ★ Always consult your doctor for the use of Antibiotics.

PREVENTION OF NON-COMMUNICABLE DISEASE

- ★ Make changes in your daily diet
- ★ Avoid alcohol and quit tobacco smoking
- ★ Exercise regularly for 30 minutes for 5 days in a week.

PREVENTION ON ANTIBIOTIC RESISTANCE

- ★ Rational Antibiotic Use : Promote the appropriate and responsible use of antibiotics. Antibiotics should only be prescribed when necessary and in the correct dosage and duration.
- ★ Public Awareness and Education : Educate the general public, healthcare professionals, and patients about the importance of responsible antibiotic use.
- ★ Infection Prevention and Control : Implement effective infection prevention and control measures in healthcare settings, including proper hand hygiene, sterilization of medical equipment, and adherence to infection control guidelines.
- ★ Vaccination Programs : Encourage widespread vaccination to prevent infections that can be effectively controlled by vaccines.

KEY FACTS GIVEN BY WHO (World Health Organization)

- ★ Antibiotic resistance is one of the biggest threats to global health, food security. and development today.
- ★ Antibiotic resistance can affect anyone of any age, in any country.
- ★ Antibiotic resistance leads to longer hospital stays, higher medical costs and increased mortality.



WHAT WE CAN DO?

- ★ Only use of antibiotic when prescribed by the certified health professionals,
- ★ Always take the full prescription even if you feel better.
- ★ Never use left over antibiotics.
- ★ Never share antibiotics with others.
- ★ Preventing infections by regularly washing your hands and keeping your vaccinations up to date.



THE NEUROSCIENCE OF LOVE

OXYTOCIN

Oxytocin (Oxt or OT) is a peptide hormone and neuropeptide normally produced in the hypothalamus and released by the posterior pituitary. Present in animals since the early stages of evolution, in humans, it plays roles in behavior that include social bonding, reproduction, childbirth, and the period after childbirth.

Oxytocin is released into the bloodstream as a hormone in response to sexual activity and during labor. It is also available in pharmaceutical form. In either form, oxytocin stimulates uterine contractions to speed up the process of childbirth. In its natural form, it also plays a role in bonding with the baby and milk production.

Production and secretion of oxytocin are controlled by a positive feedback mechanism, where its initial release stimulates the production and release of further oxytocin.

Love has consequences for health and well-being. Engaging in joyful activities such as love may activate areas in the brain responsible for emotion, attention, motivation, and memory (i.e., limbic structures), and it may further serve to control the autonomic nervous system, i.e., stress reduction.

This specific CNS activity pattern appears to exert protective effects, even on the brain itself. Moreover, anxiolytic effects of pleasurable experiences may occur by promotion of an inhibitory tone in specific areas of the brain. Thus, love and pleasure are capable of stimulating health, well-being, and (re)productivity: This wonderful biological instrument makes the procreation and maintenance of organisms and their species a deeply rewarding and pleasurable experience, thus ensuring survival, health, and perpetuation.

WHEN OXYTOCIN RELEASES ?

SPICY FOOD :

Jalepeno and other chilli peppers contain a compound called capsaicin, which research has found to trigger both pain and pleasure perception and the release of endorphins.

WHILE SINGING :

Singing can boost endorphins which result in reduced anxiety and increased happiness, better memory and concentration, improved aerobic lung capacity, increases heart rate and reduces blood pressure, and boost circulation. It makes you energize.

ATTRACTION :

When The Brain Chemicals Dopamine, Serotonin and Norepinephrine Kick In, they Cause Happiness Leading to Sweaty Palms and Faster Beating of Hearts.

ATTACHMENT :

A Release of Oxytocin and Vasopressin Hormones Helps to form "Deep Bonds".

BROKEN HEART SYNDROME :

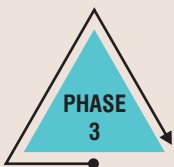
Broken heart syndrome is the sudden weakening of the myocardium of the heart. highly stressful emotional situations such as death of the loved one or difficult breakup can trigger acute heart failure.

TRIANGULAR THEORY OF LOVE



This period is characterised by high passion, rapid rise in intimacy and increased commitment. The cortisol level is elevated.

This phase is dominated by feelings of safety, calm and balance. Testosterone, cortisol and 5-HT Return to normal levels.



The essential hormones OXYTOCIN And VASOPRESSIN Restart and maintain the pair bond between the couple.



FOODS TO BOOST YOUR LOVE HORMONE

Produced in the hypothalamus, a part of the brain- oxytocin is a hormone and neurotransmitter that plays a major role in spicing your sexual desires, helps in building stronger relationships, and boosts empathy. Researchers believe that there is a strong correlation between the amount of oxytocin present and the intensity of an orgasm in a woman's body

FIGS

Fig is known for increasing libido instantly. The richness of amino acids in figs improves sexual health, and stamina by triggering the levels of nitric oxide in the body.

AVOCADOS

The buttery avocado plays a crucial role in boosting energy and sexual drive. Avocados are beneficial for both men and women as they are loaded with all essential fats, vitamins, and minerals.

WATERMELON

Watermelon is called as a natural Viagra by researchers, as it is loaded with citrulline, an amino acid which can relax and dilate blood vessels improving blood flow to the extremities, leading to heightened sexual pleasure.

SPINACH

The abundance of magnesium in spinach lowers inflammation and increases the blood flow, which help men in improving their vitality.

GREEN TEA

Green tea is the perfect beverage to spice up your sexual drive. The three magical components in green tea such as caffeine-theanine and ginseng help in boosting libido and improve sexual health.

ORANGE JUICE

Packed with Vitamin C, it is a vital antioxidant that helps improve the levels of the love hormone, enhance mood and increase sexual wellness.

EXTRA VIRGIN OLIVE OIL

This oil is rich in dietary fat which stimulates oxytocin neurotransmitters that help in reducing stress and improve vitality in men and women.

BROCCOLI

One of the highest sources of Vitamin C, this essential vitamin boosts oxytocin production which is important for lovemaking, orgasm and lactation.

DARK CHOCOLATE

Extremely rich in magnesium, dark chocolate helps to release oxytocin hormones from the hypothalamus. Magnesium further helps oxytocin receptors to function well in the body to improve sexual health.

CHAMOMILE TEA

Flower extracts of this tea activates dopamine, serotonin, and oxytocin which induces sleep and improves the levels of this hormone for an increased sexual desire.

CHIA SEEDS

Rich sources of healthy saturated fats, these tiny seeds improve oxytocin-deficiency symptoms.

WAYS TO COPE WITH DEPRESSION THAT DON'T INVOLVE PROFESSIONAL HELP INCLUDE

Exercise :

Physical activity can strengthen your immune system and boost your energy. Exercise also increases your body's production of endorphins, which can improve your mood. Aim for 30 minutes of physical activity at least three times a week.

Keep Busy :

Explore hobbies and keep your mind occupied. If you're feeling depressed, read a book, go for a walk, or start a project around the house.

Get Plenty of Sleep :

Getting plenty of rest can also improve your mental well-being and help you cope after a breakup.

Herbal and Natural Remedies :

If you don't want to take a prescription medication, ask your doctor about supplements used for depression, such as St. John's wort, S-adenosylmethionine or SAMe, and omega-3 fatty acids in the form of fish oil. Some supplements can't be combined with prescription medication, so consult your doctor beforehand. You can also explore alternative therapies for depression, such as acupuncture, massage therapy, and meditation.

V-discover



SUMMARY OF ANTIBIOTIC RESISTANCE

- ★ Antibiotic resistance refers to the ability of bacteria or other microorganisms to withstand the effects of antibiotics that were once effective in treating infections. It is a growing global health concern with serious implications for public health.
- ★ Definition : Antibiotic resistance occurs when bacteria or other microorganisms evolve and develop mechanisms to counteract the effects of antibiotics, rendering them ineffective in killing or inhibiting bacterial growth.
- ★ Causes : The main causes of antibiotic resistance include the overuse and misuse of antibiotics in human medicine, animal agriculture, and the environment. The inappropriate use of antibiotics, such as not completing a full course, using them for viral infections, or using them without a prescription, contributes to the development of resistance.
- ★ Impact : Antibiotic resistance poses a significant threat to global health. It can lead to longer and more severe infections, increased mortality rates, and higher healthcare costs. It also limits treatment options and may require the use of more potent, expensive, and potentially more toxic antibiotics.
- ★ Spread : Antibiotic-resistant bacteria can spread between humans and animals, and from person to person through direct contact or contaminated food, water, or surfaces. International travel and global trade also contribute to the spread of resistant strains.
- ★ Priority pathogens : The World Health Organization (WHO) has identified a list of priority pathogens, including methicillin-resistant *Staphylococcus aureus* (MRSA), multidrug-resistant tuberculosis (MDR-TB), and carbapenem-resistant Enterobacteriaceae (CRE), due to their high resistance rates and limited treatment options.
- ★ Solutions : Addressing antibiotic resistance requires a multifaceted approach. This includes improving infection prevention and control measures, promoting appropriate antibiotic use through education and guidelines, developing new antibiotics and alternative treatments, and implementing policies to regulate antibiotic use in both human and animal healthcare.
- ★ Global initiatives : Several international organizations, such as the WHO, the Centers for Disease Control and Prevention (CDC), and the World Organisation for Animal Health (OIE), are actively working to combat antibiotic resistance through surveillance, research, and policy recommendations.

SUMMARY OF NEUROSCIENCE

- ★ The neuroscience of love explores the intricate processes that occur in the brain when we experience feelings of love and attachment.
- ★ Initial Attraction : When we are attracted to someone, the brain releases a surge of neurotransmitters, including dopamine, norepinephrine, and phenylethylamine. These chemicals create feelings of pleasure, euphoria, and increased energy, leading to the initial stages of infatuation or “falling in love.”
- ★ Romantic Love : Romantic love is characterized by intense emotions and strong desire for emotional and physical closeness. Brain imaging studies have shown that romantic love activates several regions of the brain, including the ventral tegmental area (VTA) and the reward pathway, which are associated with pleasure and motivation. Increased activity in these areas is linked to the release of dopamine, reinforcing the feelings of pleasure and attachment.
- ★ Attachment : Long-term attachment and feelings of deep connection involve the hormone oxytocin, also known as the “bonding hormone.” Oxytocin is released during activities like hugging, cuddling, and sexual intimacy. It promotes trust, bonding, and feelings of attachment between individuals. Oxytocin also plays a role in strengthening social bonds, such as those between parents and children.
- ★ Hormonal Changes : Love and attachment influence the production of various hormones in the body. High levels of dopamine and norepinephrine during the initial stages of love can cause increased heart rate, restlessness, and obsessive thinking about the loved one. Conversely, attachment and long-term love are associated with the release of oxytocin and vasopressin, which promote feelings of calm, stability, and emotional connection.
- ★ Brain Areas Involved : Different brain regions play crucial roles in love and attachment. The prefrontal cortex, associated with decision-making and judgment, helps in evaluating the suitability of a partner. The amygdala, which processes emotions, is involved in the formation of emotional memories associated with love. The insula, associated with subjective feelings, helps us perceive and interpret the physical sensations related to love.
- ★ Love and Reward System : The brain's reward system, involving the release of dopamine, plays a significant role in love and attachment. It creates pleasurable sensations and reinforces the desire for proximity and connection with a loved one. Over time, this reward system can become strongly activated when in the presence of the loved one, leading to feelings of attachment and the motivation to maintain the relationship.

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