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## **NEWS LETTER OF CLINICAL PHARMACY**

### **VOLUME (2) ISSUE (1)-JAN-MARCH 2019**

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#### **Vision**

St.Peter's is committed to generate, disseminate and preserve knowledge and work with pioneers of this knowledge, and to be the most sought after institute globally in the field of pharmaceutical sciences by creating world class pharmacy professionals and researchers.

#### **Mission**

To achieve academic excellence with integrity and creating opportunities for leadership and responsibilities through groundbreaking performance in the field of Pharmaceutical Sciences by educating students with pharmaceutical needs of the society and to advance the knowledge through research and to



**2019- FDA APPROVED DRUG LIST( January to March)**

<b>Drug Name &amp; company</b>	<b>Active Ingredient</b>	<b>Date of Approval</b>	<b>Indication</b>	<b>Category</b>	<b>Mechanism of Action</b>
Jeuveau manufactured by evolus, inc	Botulinum toxin typea neurotoxin complex	1-2-2019	Used to treat glabellar lines	Acetylcholine release inhibitor	Jeuveau blocks neuromuscular transmission and inhibiting the release of acetylcholine.
Cablivi manufactured by ablynx	Caplacizumab	6-2-2019	To treat acquired thrombotic thrombocytopenic purpura (attp)	Von willebrand factor (vwf)-directed antibody fragment	It inhibits the interaction between vwf and platelets, thereby reducing both vwf-mediated platelet adhesion and platelet consumption
Egaten manufactured by Novartis	Triclabendazole	13-2-2019	To treat fascioliasis	Antihelmintic	Inhibition of tubulin function as well as protein and enzyme synthesis which is necessary for survival of worms.
Zulresso manufactured by sage therapeutics	Brexanolone	19-3-2019	To treat postpartum depression (ppd) in adult women	Antidepressant	Allosteric modulator of both synaptic and extra synaptic gaba-a receptors
Sunosi manufactured by jazz pharmaceuticals	Solriamfetol	20-3-2019	Treat excessive sleepiness in adult patients with narcolepsy	Dopamine and norepinephrine reuptake inhibitor	Improve wakefulness in patients with excessive daytime sleepiness associated with narcolepsy or obstructive sleep apnoea is unclear.
Mayzent manufactured by novartis	Siponimod	26-3-2019	To treat multiple sclerosis	Sphingosine 1-phosphate receptor (s1p) modulator	This drug blocks the ability of lymphocytes to release from the lymph nodes.

## MONOGRAPH ON EGATEN

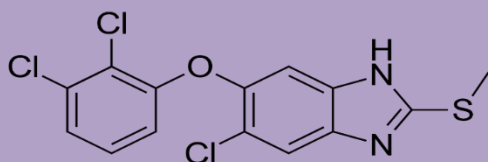
**Active Ingredient-** Triclabendazole

**Class-** antihelminthic

**Chemical name-** 6-chloro-5-(2,3-dichlorophenoxy)-2-methylsulfonyl-1H-benzimidazole

**Molecular formula-** C<sub>14</sub>H<sub>9</sub>Cl<sub>3</sub>N<sub>2</sub>O<sub>2</sub>S

### Structure



**Indication-** Egaten is indicated for the treatment of fascioliasis in patients 6 years of age and older.

### Dose and Administration

- The recommended dose of Egaten is 2 doses of 10 mg/kg given 12 hours apart in patients 6 years of age and older.

**Mechanism of action-** Inhibition of tubulin function as well as protein and enzyme synthesis necessary for survival of worms. These metabolic disturbances lead to an inhibition of motility, disruption of the worm outer surface, in addition to the inhibition of spermatogenesis and egg/embryonic cells.

### Pharmacokinetics

- Absorption- T<sub>max</sub> = 3-4hours(parent compound and the sulfoxide metabolite)
- Distribution- volume of distribution (V<sub>d</sub>) =1 L/kg.
- Protein-binding of triclabendazole, sulfoxide metabolite and sulfone metabolite was 96.7%, 98.4% and 98.8% respectively
- Elimination- The plasma elimination half-life (t<sub>1/2</sub>) of triclabendazole, the sulfoxide and sulfone metabolites is approximately 8, 14, and 11 hours, respectively.
- Metabolism- Triclabendazole is primarily metabolized by CYP1A2 (approximately 64%) into its active sulfoxide metabolite. This sulfoxide metabolite is further metabolized primarily by CYP2C9 to the active sulfone metabolite.

- Excretion- No excretion data is available in humans. However, in animals, the drug is largely excreted via the biliary tract in the feces (90%) and 10% is excreted in the urine.

**Contraindication**-Hypersensitivity to triclabendazole, QT interval prolongation and also in hepatic toxicity.

**Adverse reactions**- Headache, abdominal pain, nausea, urticaria, pruritus ,chest wall pain , increased liver enzymes

**Monitoring parameters**- ECG

**Patient counselling points** - Advise patients that egaten should be taken orally with food.

The tablets can be swallowed whole or divided into half and taken with water, or crushed and administered with applesauce. The crushed tablet mixed with applesauce is stable for up to 4 hours.

**TREATMENT GUIDELINES FOR ANTIMICROBIAL USE IN MANAGEMENT OF RESPIRATORY TRACT INFECTIONS (RTI) & COMMUNITY ACQUIRED PNEUMONIA 2019**

**Antimicrobial therapy in URTI(Upper Respiratory Tract Infections)**

Condition	Preferred drug	Alternative	Penicillin allergy
Streptococcal pharyngitis	Penicillin V (not easily available in India, Penicillin G not a substitute since oral absorption is poor)	Amoxicillin Benzathine penicillin single dose	Anaphylactic: clindamycin/ clarithromycin/azithromycin Non-anaphylactic: cephalexin/ cefadroxil
Bacterial sinusitis	Amoxicillin Co-amoxiclav	Ceftriaxone Cefpodoxime (adults)	Adults: doxycycline/ resp quinolones Children: Anaphylactic resp quinolones, Non- anaphylactic: cefixime and clindamycin
Acute otitis media	Amoxicillin Co-amoxiclav	Cefpodoxime, cefuroxime, cefdinir,	Anaphylactic: azithromycin/clarithromycin Non-anaphylactic:

**Lower respiratory tract infections (LRTI)**

- **Community acquired pneumonia (CAP)**

Type of CAP	Preferred drug	Alternative
Outpatients without co-morbidities	Co amoxiclav	Macrolides** ,Cefuroxime Cefpodoxime

Outpatients with co-morbidities*	Co-amoxiclav, macrolide/doxycycline	Cefuroxime/ cefpodoxime and macrolide/doxycycline
Inpatient, non ICU	Ceftriaxone+ macrolide/doxycycline	Cefotaxime/ amoxclav with macrolide/doxycycline
Inpatient ICU	Ceftriaxone+macrolide/doxycycline	Cefotaxime,piperacillin-tazobactam with macrolide
Inpatient ICU with risk factors for Pseudomonas aeruginosa	Piperacillin -tazobactam/ macrolide/doxycycline	Cefepime/imipenem along with macrolide/doxycycline

### Drug doses, duration and route

Drug	Adult dose	Pediatric dose
Penicillin V	500 mg twice daily	250 mg twice daily
Amoxicillin	500 – 1000 mg thrice daily PO	15-20 mg/kg twice daily oral
Co-amoxiclav	1.2 gm IVq8h	25-30 mg/kg of amoxicillin IV
Azithromycin	500 mg daily (PO or IV)	10 mg/kg once daily
Clarithromycin	500 mg twice daily	7.5 mg/kg twice daily
Doxycycline	100 mg twice daily	1.5-2 mg/kg twice daily
Clindamycin	300 mg four times a day PO	7 mg/kg thrice daily
Cephalexin	750 mg twice daily PO	20 mg/kg twice daily PO
Cefadroxil	1 gm once daily	30 mg/kg once daily
Moxifloxacin	400 mg once daily PO or IV	10 mg/kg once daily PO or IV
Cefpodoxime	200 mg twice daily	5 mg/kg twice daily
Ceftriaxone	2 gm once daily IV	50 mg/kg twice daily
Cefotaxime	2 gm thrice daily IV	30-35 mg/kg thrice daily IV
Cefepime	2 gm twice daily IV	50 mg/kg twice daily
Meropenem	1 gm thrice daily IV	20-40 mg/kg thrice daily
Imipenem	500 mg four times daily IV	15-25 mg/kg four times daily
Vancomycin	1 gm twice daily	10 mg/kg four times daily
Linezolid	600 mg twice daily PO or IV	10 mg/kg thrice daily PO or IV

### RETT SYNDROME

Rett syndrome is a very rare genetic neurological and developmental disorder. It affects the process of development of the brain resulting in loss of motor skills and speech progressively. Rett syndrome eventually causes impairment in muscle movements, communication, coordination, seizures, intellectual impairment, unusual or abnormal hand movements.

**Symptoms** :Symptoms and severity varies from child to child.

- Delayed brain growth, Microcephaly can be seen as the first sign. Losing ability of normal movements and coordination, Muscle weakness, Loss of communication skills and losing interest in the surrounding environment.

- Abnormal hand and eye movements, breathing problems, irritability, crying, sleeping disturbances, seizures, scoliosis, irregular heartbeat, cognitive impairment, others.

**Stages :**

It is divided into 4 stages.

<b>Stages</b>	<b>Age</b>	<b>Symptoms Observed</b>
Stage -1: Early onset	6-18 months	Symptoms will be unnoticed
Stage-2: Rapid deterioration	1-4 years	Communication impairment
Stage-3: Plateau	2-10 years	Seizures
Stage-4: late motor deterioration	Above 10 years	scoliosis can be observed

**Causes :**It is a genetic disorder. Caused by genetic mutation, usually in MECP2 gene. This mutation causes impairment in a critical protein production which is vital for the brain to develop. However the appropriate cause is still unknown and the research is going on.

**Risk factors :**It is rare and no risk factors actually exist. Rarely inheritance may lead to Rett syndrome.

**Diagnosis :** Presence of MECP2 mutation gene is one of the main diagnostic criteria.

- Main criteria includes limited or complete loss of communication skills, muscular abilities, unusual hand movements, gait issues.
- Exclusion criteria include brain injury, secondary to trauma or infection which causes neurological impairments or abnormal psychomotor development in the initial 6 months.
- Typical requirements involve a regression period which is followed by recovery or stabilization.
- Autism, cerebral palsy, phenylketonuria, degenerative disorders and other genetic disorders can also be considered in a few individuals.

**Genetic testing :** Genetic test is recommended. DNA analysis mostly confirms the diagnosis by simple blood test by taking a small quantity of blood from the vein of the arm of the individual.

**Treatment :** There is no cure but a symptomatic approach can be beneficial. Improvement in movement of muscles, communication and behavioural changes can be brought through treatment. Regular medical care, physical therapy, occupational therapy, speech-language therapy, nutritional support, behavioural intervention greatly supports the affected individuals.

**Alternative medicine :**

Music therapy, hydrotherapy, massage therapy, animal-assisted therapy are thought to be supportive and beneficial.