Content available at: https://www.ipinnovative.com/open-access-journals

Current Trends in Pharmacy and Pharmaceutical Chemistry

Journal homepage: https://www.ctppc.org/

Editorial

# Medicinal chemistry of some marketed quinazolin/-es/-ones as medicines

**Amit G. Nerkar**[1,*]

[1]*Dept. of Pharmacy, CAYMET's Siddhant College of Pharmacy, Sudumbare, Pune, Maharashtra, India*

ARTICLE INFO

*Article history:*
Received 19-10-2023
Accepted 29-10-2023
Available online 06-11-2023

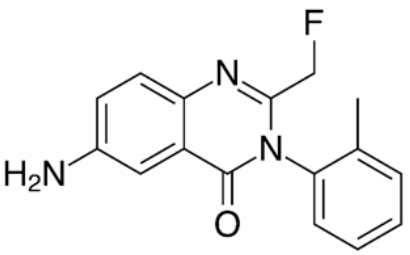
*Keywords:*
Quinazolinones
Marketed
Withdrawn
FDA
Medicine
Medicinal Chemistry

ABSTRACT

Quinazolinone nucleus has wide applications in medicine. This editorial gives a detailed account of some marketed quinazolinones along with medicinal chemistry for medicinal chemistry aspect of quinazolinones. The editorial includes some marketed, some withdrawn from market and most FDA approved quinazolinones as medicines.

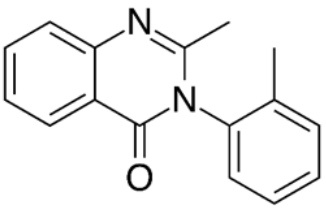


## 1. Afloqualone




Tanabe Seiyaku developed GABAergic drug Methaqualone. Afloqualone being its close congener. It can be used as sedative and muscle relaxant as well. It shows activity at the β subtype of $GABA_A$ receptor. It has side effects of skin problems after photo sensitization such as dermatitis.

## 2. Methaqualone

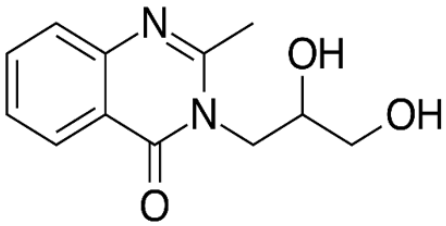



It works like benzodiazepines and barbiturates. It increases activity of GABA receptors in brain and CNS. GABA activity if increased is manifested by reduction in blood pressure, breathing and slow pulse rate causing deep relaxation. Thus, methaqualone is prescribed in insomnia. Methaqualone is category D drug and not recommended in pregnancy.

* *Corresponding author*.
*E-mail address*: dragnerkar@gmail.com (A. G. Nerkar).

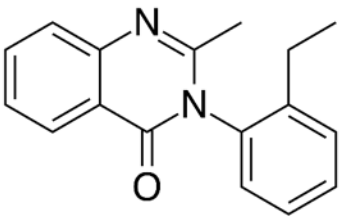
https://doi.org/10.18231/j.ctppc.2023.025

### 3. Diproqualone



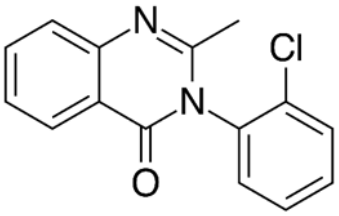

In 1950, Nogentaise de Produits Chemique manufactured and produced dipraqualone. Dipraqualone mainly is methaqualone analogue. It is marketed mainly in France and some other European countries. It has mainly antagonist activity sedative, anxiolytic, antihistaminic and analgesic properties. These activities mainly result from antagonistic activity at β subtype of $GABA_A$ receptor and at histaminic and Cyclooxegenase-1 (COX-1) receptor respectively. Also it demonstrates antagonistic activity at sigma-1 and sigma-2 receptors. Mainly used as anti-inflammatory in rheumatoid arthritis. It is not much used in treating insomnia, anxiety and neuralgia. Due its property being prototypic with methaqualone, it is sold as camphosulfonate salt in combination of ethenzamide.

### 4. Etaqualone



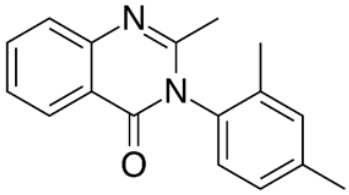

It was developed in 1960s as GABAergic receptor analogue of methaqualone. It shows potential $GABA_A$ receptor β subtype agonistic activity used for sedative, hypnotic, muscle relaxant and CNS depressant properties.

### 5. Mecloqualone



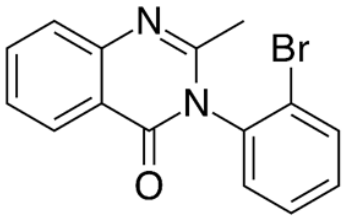

It is analogue of methaqualone marketed in 1960. Its market area was France and some other European countries. It shows agonistic activity at $GABA_A$ receptor, β sub type used for the treatment of insomnia. Thus due to agonistic activity at $GABA_A$ receptor it produces sedative , hypnotic and anxiolytic properties. Mecloqualone has short duration of action but faster than Methaqualone. It is no longer prescribed due to its overdose and abuse potential. It is a non-narcotic depressant controlled substance as per US FDA.

### 6. Methylmethaqualone (MMQ)



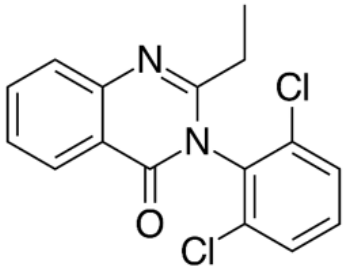

It is 2,6 Dimethylated analogue of methaqualone. It has similar action to methaqualone and about 3 times more potent in animal models. It is sold as designer analogue of methaqualone.

### 7. Mebroqualone (MBQ)




It is quinazolinone class $GABA_A$ergic and like methaqualone and mecloqualone being its 2- bromo-phenyl analogue. It was sold illegally in Germany as designer analogue of mecloqualone.

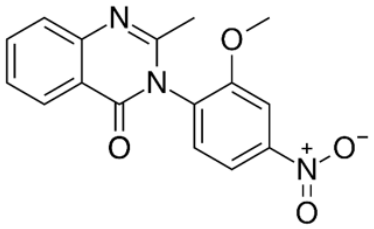
### 8. Cloroqualone




It is GABAergic quinazolinone derivative of methaqualone. It is mainly used for sedative and antitussive

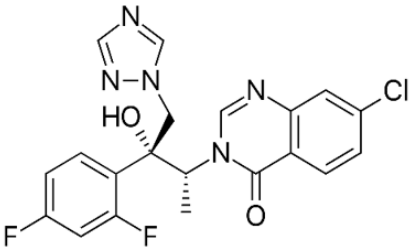
properties. It has been added to cough medicines for antitussive properties and shows potential β subtype $GABA_A$ and sigma-1 receptor agonist properties. It has weaker effects than methaqualone and mainly used as antitussive. It had major side effect and withdrawn from market for potential overdose and abuse.

### 9. Nitromethaqualone



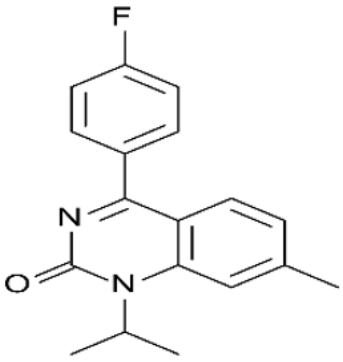
It has similar potent sedative and hypnotic properties and 10 times more potent than parent compound methaqualone. It is used in dose of 25 mg.

### 10. Albaconazole



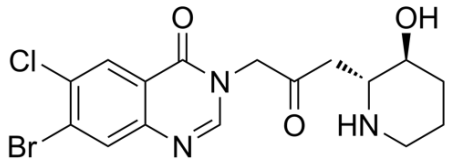
It is used as experimental antifungal triazole. It has potential broad spectrum activity. Studies also demonstrate it as an antiprotozoal agent.

### 11. Fluproquazone



Although marketed for potent analgesic, antipyretic and anti-inflammatory properties it was withdrawn from the market due to serious side effects of liver toxicity.

### 12. Halofuginone

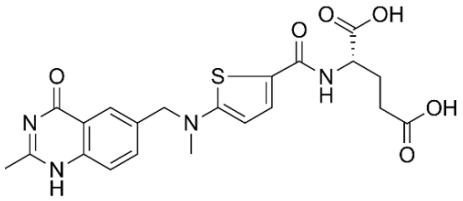


It is mainly coccidiostat used in veterinary medicine. It is synthetic analogue of Febrifugine, halogenated synthetic analogue. Febrifugine is isolated from Chinese herb Dichora febrifuga. It has received status of orphan drug designation by US FDA for treatment of scleroderma. It inhibits T helper 17 cells and is used in autoimmune disorders.

### 13. Human Thymidylate Synthase Inhibitors

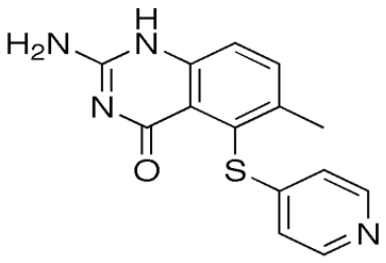
They have pivotal role in anticancer chemotherapy. The quinazolinones belonging to this class include nolatrexed, raltitrexed, pemetrexed.

### 14. Raltitrexed



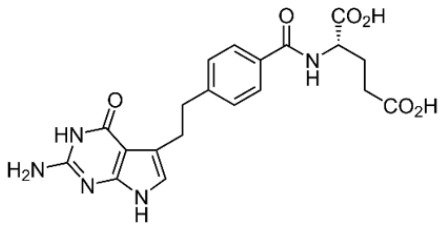
It is mainly antimetabolite anticancer drug. It is an inhibitor of hTS, human thymidylate synthase.

#### *14.1. Nolatrexed*



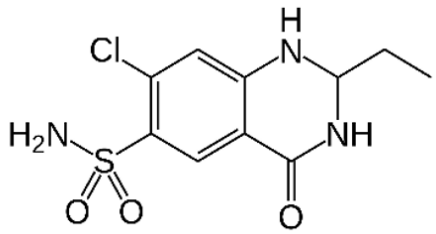
It is an inhibitor of hTS, human thymidylate synthase.

### 14.2. Pemetrexed



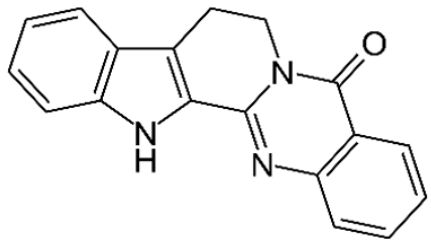
It is hTS inhibitor. Mainly used for pleural mesothelioma and Non-Small Cell Lung Cancer (NSCLC).

### 14.3. Quinethazone



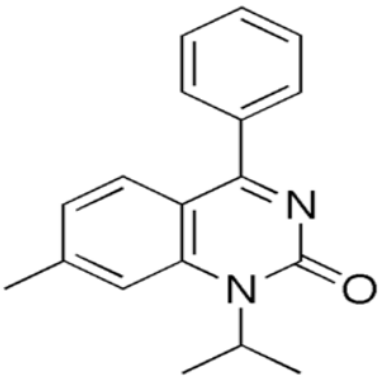
It is thiazide-like diuretic. It is used in treatment of hypertension and has adverse effect of low potassium levels.

### 14.4. Rutecarpine



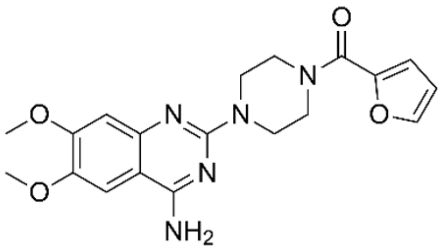
It was isolated from Tetradium ruticarpum and used as cyclooxygenase-2 inhibitor. It mainly belongs to the class of non-basic alkaloid. It is safe on CVS as compared with etoricoxib and celecoxib. It shows fewer effects of COX-2 inhibition as compared to other inhibitors and it is chemically a fused polycylic quinazolinone ring.

### 14.5. Proquazone



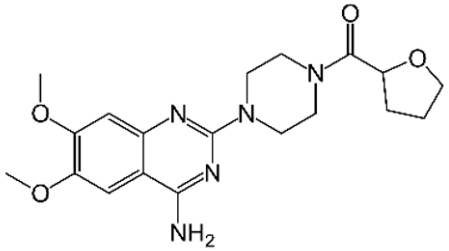
It is NSAID and 2-quinazolinone analogue.

### 14.6. Prazosin



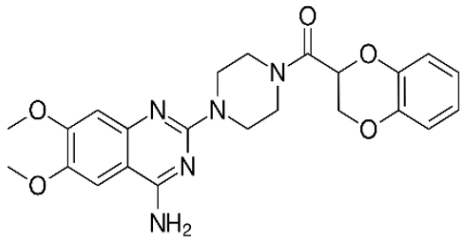
The antihypertensive characteristics of prazosin make it a second-line choice for the treatment of high blood pressure.

### 14.7. Terazosin



Terazosin was patented in 1975 and marketed in 1985. It is sold as generic medicine. It is $211^{th}$ most common prescribed medicine in US and sold over 2 million prescriptions since date.

*14.8. Doxazosin*



*Doxazosin*, is quinazoline analogue used for benign prostatic hyperplasia (BPH) and hypertension. It has over 2 million prescriptions in US and $209^{th}$ most prescribed drug in US.

## 15. Conflict of Interest

None.


## 16. Acknowledgment

The author thanks most accurate database and encyclopaedia "The Wikipedia" for most accurate data available in this fast and digital world.


## Author biography

**Amit G. Nerkar,** Professor and Research Head https://orcid.org/0000-0002-1377-8466

**Cite this article:** Nerkar AG. Medicinal chemistry of some marketed quinazolin/-es/-ones as medicines. *Curr Trends Pharm Pharm Chem* 2023;5(4):109-113.