3.1. Doxofylline

Chemical structure:

Chemical name: (7-(1, 3-Dioxalan-2-ylmethyl) theophylline)

Molecular Formula: $C_{11}H_{14}N_{4}O_{4}$

Molecular Weight: 266.26

Melting point: 144-146° C

Solubility: Water Soluble

Appearance: Colorless crystalline powder

Mechanism of action: Inhibit phosphodiesterase causing bronchodilation [40].

Adverse reaction: May cause nausea, vomiting, abdominal pain, headache, insomnia, irritability, and tachycardia, contraction, shortness of breath, high blood sugar, and proteinuria. Excessive use will emerge as a serious arrhythmia, paroxysmal spasm crisis [41].
3.2. Irbesartan

Chemical structure:

Chemical name: 2-Butyl-3-[p-(o-1H-tetrazol-5-ylphenyl) benzyl]-1,3-diazaspiro [4.4] non-1-en-4-one

Molecular Formula: $C_{25}H_{28}N_{6}O$

Molecular Weight: 428.53

Melting point: 180-181 °C

Solubility: Practically insoluble in water, slightly soluble in alcohol and in dichloromethane [42].

Appearance: A white to off-white, crystalline powder

Mechanism of action: Irbesartan is an angiotensin II receptor antagonist that provides specific blockade of the AT$_1$ receptor. This inhibits vasoconstriction and the release of aldosterone, which reduces blood pressure [43].

Adverse reaction: Diarrhea, Heartburn, Dizziness. Severe allergic reactions (rash; hives; itching; difficulty breathing; tightness in the chest; chest pain; difficulty swallowing; irregular heartbeat; muscle pain or cramps; severe or persistent stomach pain. [44]
3.3. Trandolapril

Chemical structure:

Chemical name: \((2S, 3aR, 7aS)-1-\{N-[(S)-1-Ethoxycarbonyl-3-phenylpropyl]-L-alanyl\} \text{perhydroindole-2-carboxylic acid.}\)

Molecular Formula: \(C_{24}H_{34}N_2O_5\)

Molecular Weight: 430.5

Solubility: Practically insoluble in water; sparingly soluble in dehydrated alcohol; freely soluble in dichloromethane. [45]

Appearance: A white or almost white amorphous powder

Mechanism of action: ACE inhibition with subsequent blockade of the renin-angiotensin-aldosterone system and reduction of angiotensin II levels is thought to be responsible for the majority of the effects observed with ACE inhibitors including peripheral vasodilation, reduced blood pressure and total peripheral resistance, and decreased sodium and water retention. [46]

Pharmacokinetics: Trandolapril acts as a prodrug of the diacid trandolaprilat, its active metabolite. After oral doses of trandolapril the bioavailability of trandolaprilat is 40 to
60%. Peak plasma concentrations of trandolaprilat are achieved 4 to 6 hours after an oral dose of trandolapril. Trandolaprilat is more than 80% bound to plasma proteins. About 33% of an oral dose of trandolapril is excreted in the urine, mainly as trandolaprilat; the rest is excreted in the faeces. [47]

**Adverse reaction:** Most common includes hypotension, dizziness, headache and nausea. Myocardial infarction and stroke have been reported. Other side effects include dry cough, angioedema, skin rash, and photosensitivity. [48]

### 3.4. PMCR 242

![Chemical structure of PMCR 242](image)

**Chemical structure:**

**Chemical name:** 3-(4-acetylphenyl)-2-(5-morpholino-4-(pyridin-4-yl)thiophen-2-yl) quinazolin-4(3H)-one

**Molecular Formula:** $C_{29}H_{24}N_{4}O_{3}S$

**Molecular Weight:** 508.3

**Solubility:** Practically insoluble in water; sparingly soluble in alcohol; freely soluble in dichloromethane.

**Appearance:** An yellow amorphous powder
<table>
<thead>
<tr>
<th><strong>Mechanism of action:</strong></th>
<th>NF-κβ, AP-1 transcription factor inhibitor with potential as anticancer agent. It has shown very good activity against prostate cancer through RANKL and RIPK-2 pathway.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacokinetics:</strong></td>
<td>This potential drug candidate is under preclinical trial.</td>
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</tbody>
</table>