

Manuscript molecules-564302 reviewed the chemo-preventative activities of ginger extracts (true ginger and bitter/shampoo ginger) and their components/compounds (Gingerol, Shogaols, Zerumbone, etc.). The topic is interesting, and the summary is helpful to discover new molecules/drugs for the potential chemoprevention. Thus, this manuscript is recommended to publish on Molecules after minor revision.

The content of bioactivities on cells is slightly lengthy and should be further concluded concisely. The outline of the review is a little confusing and need to be revised. *The author could take the suggested outline as a reference.*

### **Original outline:**

## **1. Introduction**

## **2. True Ginger**

### *2.1. Anti-inflammatory Studies*

### *2.2. Animal and In Vitro Studies with Ginger Extract*

### *2.3. True Ginger Extract and Helicobacter*

### *2.4. Human Chemopreventive Efficacy Studies with True Ginger Extract*

### *2.5. True Ginger Rhizome Bioactive Constituents*

#### 2.5.1. Gingerol

##### 2.5.1.1. Metabolism of Gingerol

##### 2.5.1.2. Molecular Activities of Gingerols Gleaned from Animal Chemoprevention Studies

##### 2.5.1.3. Molecular Activities of Gingerols Gleaned from Cell Culture Models (2.5.1.3.1. to 2.5.1.3.5.)

#### 2.5.2. Cancer Chemopreventive Activities of Shogaols

##### 2.5.2.1. Pharmacokinetics and Metabolism of Shogaols

##### 2.5.2.2. Animal Initiation/promotion Chemoprevention Studies

##### 2.5.2.3. In Vitro Studies (2.5.2.3.1 to 2.5.2.3.4.)

### *2.6. Cellular and Molecular Activities of Paradols*

### *2.7. Cellular and Molecular Activities of Zingerone*

### *2.8. Cellular and Molecular Activities of $\alpha$ -Zingiberene*

### **3. Bitter/Shampoo Ginger**

*3.1. Initiation/Promotion Studies*

*3.2 to 3.6 (different cells)*

### **4. Conclusions and Future Research**

#### **Suggested Outline:**

### **1. Introduction**

### **2. Bioactivities of Ginger Extracts**

*2.1 True Ginger*

*2.2 Bitter/Shampoo Ginger*

### **3. Bioactivities of Constituents/Molecules in Ginger Extracts**

*3.1 Gingerol*

In Vitro Studies; In Vivo Studies; Metabolism/PK

*3.2 Shogaols*

In Vitro Studies; In Vivo Studies; Metabolism/PK

*3.3 Zerumbone*

*3.4 other compounds*

*3.4.1 Paradols*

*3.4.2 Zingerone*

*3.4.3  $\alpha$ -Zingiberene*

### **4. Conclusions and Future Research**