

Review of: "Developing the theory of Toxic Chemotherapeutic Nutrition for Cancer Cells: Glucosodiene Polymer Structure, Safety, Efficacy, and Human Outcomes in Targeting Tumors via Glucose Mutation"

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Potential competing interests: No potential competing interests to declare.

Opinion concerning paper entitled "Developing the theory of Toxic Chemotherapeutic Nutrition

for Cancer Cells: Glucosodiene Polymer Structure, Safety, Efficacy, and Human Outcomes in Targeting Tumors via Glucose Mutation.

This long title suggests what authors obtained the drug for Breast cancer curing. I will discuss the contents of paper. In two parts: chemistry and biology.

Chemistry:

1. The ground question is what authors really applied in further biological investigation? The treatment of D-glucose under basic conditions, especially under elevated temperature can provide through 1,2-enediol cascade of reactions to 3-deoxy-gluconic acid without usage of oxidizing agents. Description of preparation does not contain information about isolation of transformation product. Analysis of ¹H NMR spectra does not confirm the structure product: according to LC-MS (Fig. 8, evidently are present minimum two compounds). Fig. 9 indicated even molecules much heavier. The problem is also presence of free hydroxyl group on anomeric carbon atom and possible mutarotation.
2. The ¹H NMR spectroscopy may help after peracylation of obtained product. The acetyl-methyl group will appear in region where the other "sugar protons" are not present.
3. The name of expected product it is not "glucosodiene", rather D-Glucose dimer or oligopolymer. Necessary is application more exact method for molecular weight measurements.
4. The explanation of applied term "glucosodiene" has not any theoretical background. Only hydrogen is an element have one electron in outer shell. The carbon, nitrogen and oxygen have number of electrons varying from 4 to 6 in valence shell and different chemical properties.
5. In page 7 it is a sentence [glucosodiene] It is formed through the self-association of monomers derived from glucose isomers that are connected through 1-2 linkages. The simple comparison of structure clearly indicated loss of water molecule in starting glucose.

Biochemistry

1. Authors use typical cytotoxicity test interesting only for healthy cells. That about bio-target TNBC cells, the manuscript does not contain any data.
2. The observe inhibition of reaction product can be assigned to presence of 2-deoxy-D-glucose a known inhibitor of HK2, an enzyme inhibiting primary phosphorylation of D-glucose unit ($K_m = 27$ micromole's) in respect to HK2.
3. The result of total cure with obtained preparation after two weeks is not acceptable. First what about dose and treatment regime. The one example of cure is inessential from the statistic point of view.
4. Compound with unknown structure and unknow molecular mechanism of action has been applied to human!!

In summary the submitted paper has not any scientific value in present form. Several doubts as to real structure of obtained product must be improved.