164. Title: Interaction of phytochemicals with hypoglycemic drugs on glucose uptake in L6 myotubes

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Abstract: The present study analyses the effect of eugenol, arecoline and vanillic acid alone and in combination with two oral hypoglycemic drugs (OHD), namely, metformin and 2,4-thiazolodinedione (THZ), on 2-deoxyglucose (2DG) uptake in L6 myotubes. 2DG uptake in L6 myotubes was determined using an enzymatic assay developed by Yamamoto et al. (2006). Lipid content inside the cells has been estimated with oil red O assay. The absorption, distribution, metabolism, and excretion (ADME) and drug likeness properties of these phytochemicals are estimated using software QikProp (R). All the three phytochemicals enhance 2DG uptake both in time- and dose-dependent manner. Eugenol and arecoline enhances 2DG uptake synergistically with both the OHD; whereas vanillic acid showing partly synergy with THZ and antagonistic activity with metformin on 2DG uptake. Eugenol and arecoline significantly increase the expressions of the glucose transporter type 4 (GLUT4) and phosphoinositide 3-kinase (PI3K) genes, but not the peroxisome proliferator-activated receptor (PPAR) gamma. Whereas vanillic acid does not has any significant effect on the expressions of these genes, the ADME results indicate that these phytochemicals are satisfying all the conditions to have a good oral bioavailability. These findings suggest that these phytochemicals can replace the commercial drugs in part, which could lead to a reduction in toxicity and side effects caused by the later as well as reduce the secondary complications.