

19th International Congress on

NUTRITION & HEALTH

April 12-14, 2018 | Amsterdam, Netherlands

Identification of a microRNAs triad for monitoring ketogenic diet program

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In this pilot trial, we evaluated in obese subjects the effect of a 6-weeks biphasic ketogenic diet (KD) program on biochemical parameters, body composition and plasma miRs profile. The biphasic KD program for 6 weeks' period ameliorate both biochemical and anthropometric parameters in obese and overweight subjects (36: 18 females and 18 males, same age segment) re-collocating them into stage 0 from stage 1 of Edmonton Obesity Staging System (EOSS) parameters which consider both, blood biochemical and anthropometric data. We point out a significant decrease of insulin (more than one subject, about 1/3, not knowing before, was insulin resistant) and triglyceride levels as well as of weight and BMI. Either waistline, hip circumference decreased (express in centimeters) decreased of 8-10 inches that is a great result even not significant in p-value. Systemic integrity parameters such as ALT, AST and eGFR, and the most hormonal axis (i.e. thyroid) are unaffected with slight effect of TSH and not statistically significant, decrease. Add to that we recorded no give up subjects, due to a support on food specifically designed but on a high personalization of the diet. Besides that, the screening of miRnome (799 miRs directly detected) point out a triad of microRNAs (miRs) that strongly affected by the diet and here proposed as biomolecular/biochemical tools to monitor very low carbohydrate nutritional regimens. Among all the miRs screened, we identified a triad of miRs, namely hsa-let-7b-5p, hsa-miR-143-3p and hsa-miR-504-5p that have strong validation targets already known that could be used to monitor this nutritional intervention in order to have a tool that reflects, indirectly the regulatory biochemical mechanisms and either cell signaling to the orchestration of metabolic and signaling pathways. The overall outcome of miRNA shows an improvement on overall health status (improving fat and glucose metabolism, improving immune system, improving bone health).

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