C14:0, C16:0, C17:0, C18:0) in total fatty acids was between 37.5-78.3%. In eleven counties six samples had 2-16% more saturated fatty acids than the average 44% published in Hungarian food composition table.

The percentage of the monounsaturated fatty acids (MUFA) as C14:1, C16:1, and C18:1 was in the range of 13.2 and 43.5. The ratio of polyunsaturated fatty acids (PUFA) including C18:2n-6, C18:3n-3, C18:3n-6, C20:3n-6, and C20:4n-6 was between 6.9 and 25.5%. The level of essential linoleic acid showed a very wide range as 6.9 and 23.7% in total fatty acids while the ratio of linolenic acid was in the range of 0-1.3%.

Among the trans fatty acids (TFA) elaidic acid (C18:1n-9t) originated from the hydrogenated vegetable oils and the linoleic-acid isomers as C18:2t9,t12, C18:2c9,t12, C18:2t9,c12 of ruminant origin could be identified. The ratio of elaidic acid in total fatty acids was 0.07-5.04% that means 0-150 mg elaidic acid in 100 g milk fat calculated on the base on fat content. In one sample 174 mg elaidic acid in 100 g milk was measured. The ratio of C18:2 isomers in total fatty acids was below 0.7%.

During the lactation, the fat composition of the human milk is highly influenced by the fatty acid composition of the diet. Data of this survey shows that the much higher level of SFA, the lower values of MUFA and PUFA, as well as the essential fatty acids in the human milk are due to unhealthy diet. The appearance of TFA in human milk is due to the consumption of foods containing hydrogenated vegetable oils one day before sample collecting. According to a national survey done by NIFNS TFAs present in many industrially produced foodstuffs in Hungary, as well. The TFAs have adverse physiological effects on the development of new-borns; these fatty acids can cause irreversible metabolic changes. The TFAs are able to inhibit the formation of long chain PUFAs as arachidonic and docosahexanoic acids which are inevitable during the brain development of the new-borns, as well as in the metabolic pathway of prostaglandins and thromboxans, the main responsible factors in balancing the blood viscosity and the formation of thrombus.

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What do we know today about lycopene?

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Lycopene is an acyclic carotenoid molecule that does not take part in the synthesis of beta-carotene because of the lack of beta rings. Lycopene is a very powerful antioxidant *in vitro* and *in vivo*, as well. Lycopene shows a marked preventive effect against certain cancer and cardiovascular diseases partly thanking to its antioxidant characteristics. Main dietary sources of lycopene are tomato and foods prepared with tomato, watermelon, red grapefruit and some other exotic fruits. Scientific observations have proved that agricultural practices and food industrial processes significantly determine the lycopene content of fresh or prepared foods. In the frame of a 10 years' cooperation with Szent István University Department of Horticultural Technology the National Institute for Food and Nutrition Science (NIFNS) have measured the lycopene content of at least two dozen tomato varieties, and investigated the effects of horticultural techniques and weather conditions on lycopene level of tomato fruits. It was also studied how food industrial processes and dish preparing techniques determine the lycopene level of food products, finally a functional food with increased lycopene level was prepared with the use of by-products of tomato industry. Dietary lycopene intake was estimated in two small groups of Hungarian population and based on the representative nutrition survey done by NIFNS in 2003-2004, a population based intake was also calculated.

It was proved that lycopene accumulates in the tomato fruit during ripening, the correlation between the colour index and lycopene content can be drawn by a second order equation. Since the optimal temperature for lycopene synthesis is between 16-21°C, significantly lower level of lycopene by 25-30% could be detected in fruits directly exposed to sunlight having higher surface temperature than in that being in the shadow of leaves and having lower surface temperature. Significantly different lycopene levels were observed in different tomato varieties, the highest level (9,55-13,4 mg/100 g) was observed in industrial cultivars, middle values were in fruits of eating varieties harvested in green house (7,0-8,3 mg/100 g), while the lowest levels (4,90-8,02 mg/100 g) could be detected in tomato cultivars for fresh consumption harvested in open air. It was established that several factors including harvesting date or more punctually the weather conditions 5-10 days before the harvesting, the water-stress, the increased CO_2 level, and the grafting significantly modify the lycopene level of berries. Based on the consumption data the lycopene intake was estimated in a children's (n=502) and an adult's (n=205) group as 2.98±4.71 mg/capita/day, and 4.24±8.47 mg/capita/day, respectively. Data showed very big differences among subjects. Using the data

of the representative nutritional survey the population intake was around 2 mg/capita/day, but the lowest and highest levels showed very wide range of intake (0-40 mg/capita/day).

Lycopene has an excellent antioxidant capacity, its preventive and health-promoting properties are well-known and widely proved epidemiologically and experimentally, as well. Climate conditions in Hungary make possible to produce very valuable tomato fruits either economically or nutritionally. Increased consumption of fresh tomato and tomato-based foodstuffs can play an important role in the risk reduction of non-communicable diseases which are in connection of diet and especially increased free radical reactions.

Our preliminary data during the investigation of injuries following suprarenal aortic clamping in rats

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During various surgical interventions (for example: organ transplantations, vascular surgery, tumor removal) it is often necessary to clamp aorta and/or greater arteries for shorter or longer period of time, which disturbs the blood supply of organs/regions and during the following reperfusion as postoperative complications, further injuries can occur. As its most serious complication, systemic inflammatory response syndrome or as part of the syndrome, multiple organ failure can evolve. In our experiments, we aimed to investigate the development of the triggering factors of this condition, and to set up a suitable, appropriate experimental model for also studying the protection of this condition.

Adapting C. J. Shields et al. (2003) aorta occlusion model with small modification, a 30-minute ischemia followed by a 120-minute reperfusion was examined in male Wistar rats. We used 60mg/kgbw of thiopental for anesthesia. After cannulation of femoral artery, blood samples (0.5 ml per each) were taken before ischemia, prior to clip removal, and at the 1^{st}-20^{th}-60^{th}-120^{th} minutes of the reperfusion. The blood-gas analysis and the hematological parameters were immediately measured, and to determine the liver enzymes' levels we stored plasma samples on -70 C° degree until usage. The controls were sham-operated animals.

According to the blood-gas analysis, the pH levels remained within physiological range in both groups (pH = 7,35 – 7,45), the arterial pCO_2 and pO_2 values presented small changes during the experiments. Within hematological parameters the amount of white blood cells significantly increased in the I/R groups compared to controls and the extent of ascent was 50% at the end of the reperfusion. Some important parameters of red blood cells showed slight changes. The liver enzymes, especially the GOT levels increased with 67% towards the end of the reperfusion and the GOT/GPT proportion raised in the I/R groups as well.

In our in situ rat model, according to the examined parameters after I/R systemic inflammation, microcirculatory problems of some organs and results showing hypoperfusion damages were obtained. To determine the multiple organ failure and also for further standardization, we are continuing our researches.

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