Risikovurdering af uridin i kosttilskud

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Risikovurdering af uridin i kosttilskud

risikovurdering af nyt næringsstof til kosttilskud

Bestilling

Fødevarestyrelse anmoder om en risikovurdering vedrørende tilsætningen af stoffet uridin til kosttilskud.

Virksomheden oplyser i sin ansøgning, at der er tale om en tilsætning af 300 mg uridin pr. anbefalet daglig dosis.

Konklusion

Der kunne ikke findes litteratur, der beskriver skadelige effekter af uridin, men det er generelt svært at vurdere sikkerheden af uridin, da der kun findes meget få data. DTU Fødevareinstituttet vurderer derfor, at en sundhedsmæssig risiko fra et indtag på 300 mg uridin per person per dag via kosttilskud ikke kan udelukkes.

Risk assessment

The product name is Uridine-5'- monophosphate disodium salt (in this assessment referred to as Uridine). Uridine, a uracil nucleoside, is an essential component of RNA synthesis and plays an important role in the synthesis of glycogen. In addition, it contributes to the synthesis of bio-membranes through formation of pyrimidine-lipid conjugates. In humans, uridine can be found in most biofluids, including urine, breast milk (2.2 mg/kg), cerebrospinal fluid (CSF), and blood. Within the cell, uridine is primarily located in the mitochondria, in the nucleus and the lysosome. It can also be found in the extracellular space

It has earlier been reported that the liver is capable of rapid and essentially complete removal of uridine derived from intestinal absorption. However, previous studies showed that oral administration of uridine increased the plasma concentration of uridine in rats. This has also been seen in humans where a study demonstrated that ingestion of uridine (0.5 mg/kg body weight) increased the plasma concentration of uridine by 1.2- fold. In addition, ingestion of freeze-dried beer increased the plasma concentration of uridine by 1.45-fold. Together, these results suggest that intake of foods containing amounts of

uridine contributes to an increase in its plasma concentration in humans. Factors including ethanol ingestion, rigorous muscular exercise, fructose ingestion, and amino acid ingestion also affect the concentration in plasma.

A number of studies in the literature have found that uridine has physiological and pharmacological effects on biological systems, such as the central nervous system and reproduction. These studies are mainly performed in subjects with a disease. These studies are not reported to include toxicological endpoint and can as such, not be used to assess the safety of uridine.

Except for an acute study in mice where the LD50 value was determined to be 4335 mg/kg bw. This study is of minor relevance as it is a pour indicator of systemic toxicity at lower doses. No other toxicological relevant studies in animals could be identified.

The applicant submitted short reports of four papers where three of them refer to human studies in Alzheimer patients where the drug Souvenaid were tested. Souvenaid is reported to contain the same constituents including Uridine as the present food supplement. The human studies referred to are of acceptable quality and the duration is 24 weeks. The daily administration of Souvenaid in these study provided 625 mg Uridine monophosphate per person per day. The test groups were for all studies Alzheimer patients and no adverse safety issues were reported. However, the studies were not designed to detect safety related issues and can therefore not be used directly to assess the safety of uridine. In addition, a patient group like Alzheimer patients are not representative for the general population. However, the relatively high daily dose of uridine (625 mg), the number of participants, the duration of the studies as well as the absence of severe side effects are on the other hand supportive for the safety of uridine.

Uridine is also present in most foods consumed after infancy principally in the form of RNA, but there are no useful information available regarding concentrations and bioavailability of uridine in foods.

Conclusion

Uridine monophosphate (uridine) is naturally occurring in low amounts in foods and can be synthesized in the human body. Uridine has shown to have physiological and pharmacological effects on a number of biological systems in both animals and humans. Only one limited acute study in rats was available to conclude on the toxicity of uridine. Reporting of adverse finds following administration of uridine were not identified. Human studies reported no overt toxicity after administration of uridine (625 mg) daily up to 24 weeks to Alzheimer patients.

Based on the absence of reported adverse effects in the human studies, using a twice as high dose, it could be expected that 300 mg uridine per person per day would not have adverse effect. However, as no properly designed safety studies in animals or healthy individuals have been made available and as there is also a lack of information on

concentrations and bioavailability of uridine in foods, the adverse effects from the intake of 300 mg uridine per person per day through a food supplement cannot be excluded.

Benyttet litteratur

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