CNEU MEDICAL s.r.o.
Jeřábkova 1459/8, Chodov, 149 00 Praha 4, Czech Republic

Food Interference Factor Test Report of CarciReagent

（Experiment Test）
(This test is done according to EN13612:2002)

No.: FIFTR/ZYB/2021

Introduction
In this test, we studied the interference of food with test results for the medical device. We selected 212 persons, of which 210 were used for this test. Our purpose was to study whether the consumption of foods that increase tyrosine levels in the body or foods rich in pigments within 48 hours before testing with medical device can lead to false-positive results.

Content:

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1, Name of in vitro diagnostic device for self-testing
CarciReagent

2, Description of in vitro diagnostic device for self-testing
Test kit for the detection of the approximate amount of monohydroxyphenol metabolites (tyrosine) in urine (Lay semi-quantitative test for self-testing) (Chemical chromogenic method)

3, Intended use of the in vitro diagnostic device for self-testing
"CarciReagent - an in vitro diagnostic device for self-testing, intended for the detection of monohydroxyphenol metabolites (tyrosine) and its approximate amount in the patient's urine (Lay semiquantitative test)"

4, Principle and function of in vitro diagnostic device for self-testing
The basic principle of the test is based on the improved method of Millon's reagent (Millon's reagent), which monitors the increased amount of tyrosine (monohydric phenolic amino acids and their metabolites) in the urine. By changing the color of the mixture in the ampoule after adding 3 ml of morning urine (middle urine stream), the reaction color cascade can be used to determine if urine samples contain increased amounts of these metabolites. The reagents in the ampoule and the tyrosine content in the urine show a characteristic chromogenic response that can be used for the clinical diagnosis of intracellular metabolic abnormalities (detection of possible changes or disorders in metabolism within the human cell). The determined approximate content of tyrosine in urine (according to the attached table from 0–2000 mg per liter of urine) reacts with the chemical reagent and, depending on its amount, turns colored. According to the enclosed color scale, the test result can be read from No. 1 to No. 8. The result from No. 1 to No. 3 is the amount of tyrosine in the normal concentration, so the result is considered negative, and no increased amount of tyrosine has been demonstrated. With results No. 4 and No. 5, it is already a positive finding of an increased amount of tyrosine in the urine. If the tyrosine concentration is higher than 500 mg per liter of urine, ie result No. 6, No. 7, No. 8, this is a positive result, a high content of tyrosine in the urine may indicate a more serious disease. In case of positive results, it is recommended to perform a more thorough examination by a general practitioner in order to exclude the risk of a possible serious illness.

5, Objective of the functional evaluation of in vitro diagnostic device for self-testing
To study whether the consumption of foods that increase tyrosine levels in the body or foods rich in pigments within 48 hours before testing with medical device can lead to false-positive results.

6, Plan of functional evaluation of in vitro diagnostic device for self-testing

6a, Responsible person of functional **evaluation of in vitro diagnostic device for self-testing**
Mr. Hu Min (Quality Inspector) is appointed as the person responsible for conducting the in vitro diagnostic device function evaluation.
The responsible persons who performed the laboratory samples, performed the tests and evaluated the results are fully qualified to work in the laboratory. Laboratories are responsible for performing the required experimental tests and have the necessary certification. The laboratories used to perform the tests are part of large hospitals, which are always listed in the individual test reports.

6b, List of laboratories used for functional evaluation of in vitro diagnostic device for self-testing
Second Affiliated Hospital of Nanchang University

6c, Timetable for functional evaluation of in vitro diagnostic device for self-testing
1-15 September, 2021

6d, Number of samples taken and tests performed for functional evaluation of in vitro diagnostic device for self-testing
212 samples for primary screening, 210 samples (out of the 212 samples) for taking foods with increased tyrosine content or foods rich in pigments within 48 hours after consumption, the same 210 samples for over 48 hours eating foods that would increase the content of tyrosine in the body or foods rich in pigments). Age of people: 18-60.
For testing we prepare 750 tests (from each batch 250 pieces) and these batches belong to LOT 20190303, LOT 20190501, LOT 20190702 (all valid for three years). Because three batches were used, and the aim was not to compare batches with each other, the test procedures were performed randomly, there were 212 tests from batch 20190303, 210 tests from batch 20190501, and 210 tests from batch 20190702. Intra-batches and Inter-batches comparison was done during testing of Stability according to EN ISO 23640:2015 (part of technical documentation).

6e, Instructions for use, including a description of the conditions of use for functional evaluation of in vitro diagnostic device for self-testing
As part of the tests used in this evaluation of the function of the in vitro diagnostic device for self-testing, the laboratories were provided with standard instructions for use (Chinese version). In these tests, only urine collection was performed by the patients themselves (lay people), then the collected urine was immediately taken over by the laboratory to perform the test, the test itself and its evaluation was already performed by professional laboratory staff.

6f, Data on the function of the in vitro diagnostic device for self-testing
All function data are described in the chapters above and in particular in chapter "5, Objective of the evaluation of the function of the in vitro diagnostic device for self-testing".

6g, Documentation of functional evaluation of in vitro diagnostic device for self-testing
All documentation used is part of the technical documentation of the in vitro diagnostic device CarciReagent and is in the possession of the manufacturer (CNEU MEDICAL s.r.o.).

7, Basic information on the intention to functional evaluation of in vitro diagnostic device for self-testing
The manufacturer provided full information on the purpose of the in vitro diagnostic device, its detection principle, its proposed use, the method of evaluation of the test result and the interpretation of the result. Information was provided to those who collected the urine, performed the test, and evaluated the result and fully understood the function and use of the CarciReagent in vitro diagnostic device.

8, Design of experimental setup of functional evaluation of in vitro diagnostic device for self-testing
The procedure for validation tests is as follows:

1, Selection of tested persons according to the intention of individual evaluations (with regard to health status, age) and divided into 7 groups.
2, Urine samples collection: A fresh and clean urine samples were collected and marked according to groups.
3, Sample test: Suck 3ml of the urine sample with a urine pipette, add it into the ampoule bottle containing the reagent, and let it stand.
4, After the reaction time is reached, observe the color of the precipitate and compare it with the standard color chart, and finally record the accurate color result. The judgment criteria are:
a, Negative: The reaction result is colorless/pale yellow/reddish.
b, Positive: The reaction result is light red/pink/rose red/brown red/dark rust red.
5, Carrying out the evaluation of all performed tests with regard to the goal of the given function evaluation
6, Processing and passing on the conclusions of the evaluation of the function, including informing about unexpected results or other undesirable situations during the implementation of the experiment
Aspects of tests for validation of in vitro diagnostic device function evaluation for self-testing:
Aspects that could affect the results of the CarciReagent in vitro diagnostic device performance evaluation were taken into account during the individual experimental tests. Emphasis was placed on qualified selection of test subjects, proper urine collection, adherence to the test procedure and its evaluation. The stability of the test set is set at 3 years. The persons who performed the testing and evaluation were acquainted with the aim of the individual experimental tests.

9, Structure of functional evaluation of in vitro diagnostic device for self-testing
A total of 632 urine samples were tested

Research 1:
The research subjects were 212 normal people who had not eaten any food that would increase the content of tyrosine in the body within 48 hours, kept their bodies in a normal state, and had negative test results.

Research object	number of people	Result		Positive rate	Negative rate
		Positive	Negative		
Normal population	212	2	210	1%	99%

Research 2：
The 210 normal people whose test results were negative in the first experimental study were taken as the research objects of the second experiment, and they were divided into 7 groups with 30 people in each group. Foods with increased tyrosine content, group 7 were arranged to eat foods rich in red pigment, and to do a second urine reagent test within 48 hours after consumption. The test results of groups 1∽6 are as follows:

Group number	Normal people who have eaten certain types of food within 48 hours	LOT number	Number of people	Result		Positive rate	Negative rate	Average positive rate
				Positive	Negative			
1	Eating dairy products, including cheese, chocolate, milk, lactic acid drinks, cheese, kefir, condensed milk, etc.	20190305	10	1	9	10,00%	90,00%	13,30%
		20190515	10	2	8	20,00%	80,00%	
		20190722	10	1	9	10,00%	90,00%	
2	Consumed alcoholic beverages, including tea, caffeinated beverages, liquor, fruit wine, beer, vinegar, etc.	20190305	10	1	9	10,00%	90,00%	16,70%
		20190515	10	2	8	20,00%	80,00%	
		20190722	10	2	8	20,00%	80,00%	
3	Eating fruit, including citrus, pineapple, banana, figs, etc.	20190305	10	2	8	20,00%	80,00%	10,00%
		20190515	10	1	9	10,00%	90,00%	
		20190722	10	0	10	0,00%	100,00%	
4	Eating meat, including animal liver, beef, sausage, ham, fermented food, etc.	20190305	10	1	9	10,00%	90,00%	20,00%
		20190515	10	2	8	20,00%	80,00%	
		20190722	10	3	7	30,00%	70,00%	
5	Eating vegetables, including tomatoes, broad beans, lentils, soybean paste, fermented bean curd, stinky tofu, Songhua eggs, pickled products (such as sauerkraut, kimchi), etc.	20190305	10	2	8	20,00%	80,00%	10,00%
		20190515	10	0	10	0,00%	100,00%	
		20190722	10	1	9	10,00%	90,00%	
6	Have eaten seafood, including sardines, blue round ginseng, horse mackerel, tuna, hairtail, sea bass, yellow croaker, carp, oyster, crab, abalone, etc.	20190305	10	2	8	20,00%	80,00%	23,30%
		20190515	10	2	8	20,00%	80,00%	
		20190722	10	3	7	30,00%	70,00%	

Group 7 urine color test results are as follows:

Group number	Normal people who have eaten certain types of food within 48 hours	LOT number	Number of people	Color urine	Normal urine	Urine discolored rate	Average positive rate
7	Normal people who have eaten food rich in pigments such as beets, aloe vera, dragon fruit, and beetroot within 48 hours	20190305	10	0	10	0,00%	10,00%
		20190515	10	2	8	20,00%	
		20190722	10	1	9	10,00%	

Research 3:
The 210 test subjects were tested for a third urine reagent 48 hours after eating foods that would increase the content of tyrosine in the body or foods rich in pigments, and all the test results were negative.

Research object	LOT number	Number of people	Result		Positive rate	Negative rate	Average positive rate	Average negative rate
			Positive	Negative				
Normal population 48 hours after eating foods that increase tyrosine levels in the body	20190305	70	0	70	0%	100%	0,00%	100,00%
	20190515	70	0	70	0%	100%		
	20190722	70	0	70	0%	100%		

10, Records of tests of functional evaluation of in vitro diagnostic device for self-testing

All detailed documentation of the records of functional tests performed in the laboratory of hospital is available only to this institution. The procedures were performed in accordance with applicable laws and regulations. After performing the tests, the laboratory prepared summary and evaluation with data that are not subject to personal data protection. These have been received by the manufacturer and are part of the technical documentation for the in vitro diagnostic device.

11, Observations and unexpected results by functional evaluation of in vitro diagnostic device for self-testing

Unexpected results were not observed during the experimental tests, no deficiencies were reported with the test kits, and the tests did not need to be repeated.

12, Evaluation of individual experimental tests and functional evaluation report of in vitro diagnostic device for self-testing

Through 3 consecutive tests, it has been proved that within 48 hours before using the reagent test, eating foods that can increase the content of tyrosine in the body may interfere with the test results, resulting in false positive test results. Eating foods rich in pigment may excrete red urine, making the urine sample invalid and not suitable for continued testing. However, after 48 hours of eating these foods, the reagent test was carried out, and the interference factor basically did not exist.

13, Changes during the functional evaluation study or re-evaluation

No changes were made during the evaluation study or re-evaluation.

14, Protection and safety of the persons under investigation

The protection and safety of the persons under investigation were fully ensured and no person was exposed to any danger. The protection of the personal data of the persons who took part in the testing was fully ensured.

15, References and list of documents

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