IMPACTING PATIENT QUALITY OF LIFE FOR OVER A DECADE

A Statistical Analysis of Over 20,000 Patients

Sanesco Monograph #1

Sanesco® *health in balance*

NeuroLab®
A Division of Sanesco International

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Dear Colleagues,

I'm eager to share with you the analysis of data from a large cohort of patients that Sanesco® and NeuroLab® have collected over the past decade. The data in this report helps validate the clinical application of urinary neurotransmitter testing as well as non-drug interventions to support patients. It also helps validate the Communication System Management™ (CSM) model which is the patient-centered, holistic clinical approach Sanesco® promotes to restore balance in the HPA-T axis.

In this study, we look at data that relates to the improvement of self-reported quality-of-life measures correlated with urinary neurotransmitter levels before, during, and after the use of Targeted Nutritional Therapy™ (TNT), a natural medicine approach designed by Sanesco to support the nervous system.

We have chosen to focus on 12 key quality-of-life issues that frequently challenge patients seeking care. Restoration of neurotransmitter and hormonal balance is one of the primary foundations of the CSM™ model. The CSM™ Clinical Model begins by obtaining baseline neurotransmitter levels through analysis of a urine sample, along with salivary samples to evaluate adrenal function. This is followed by a correlation analysis of the patient's symptom questionnaire along with their neurotransmitter and adrenal laboratory values. Quality-of-Life scores are derived from the patient's self-reported symptom questionnaire. Finally, a personalized recommendation for TNT™ products is given to the practitioner. The model continues with repeat clinical assessment of the patient and re-testing to measure improvement.

Again, the results of this data analysis and the information within this monograph will most certainly help validate the clinical effectiveness of urinary neurotransmitter testing, the efficacy of TNT™ products, as well as the CSM™ model. In the following pages, you may discover that the results of this work constitute the beginning of a new and groundbreaking paradigm regarding how common quality-of-life issues are addressed by health care providers and may eventually shift patient care in a number of ways.

I invite you and your patients to join Sanesco® on our journey to develop state-of-the-art, evidence-based, data-driven research for the generation and promotion of clinical tools that will result in improved outcomes for many common clinical challenges. This preliminary study is a significant step on that journey.

Yours in Health,

R.W. Watkins, MD, MPH, FAAFP
Chief Medical Officer & Laboratory Director

INTRODUCTION

For over a decade, Sanesco® has been collecting laboratory and Quality-of-Life data on our patient population. For the purposes of this preliminary investigation, we selected 20,140 unique patients who have taken TNT™ formulas. Each patient record contains results of one or more Hypothalamus-Pituitary (HP) or Hypothalamus-pituitary-adrenal (HPA) test(s) along with quality-of-life assessment(s); The first test [TEST #1] is a baseline assessment conducted prior to TNT™ product administration, and subsequent tests, administered after the patient has begun taking TNT™ formulas, are labeled sequentially [TEST #2, TEST #3, etc.].

The hypotheses set forth in this preliminary study are aimed at further substantiating three major components of Sanesco's value-proposition:

- Hypothesis 1: Adherence to the CSM™ Clinical Model leads to improvement in patient neuroendocrine levels measured over time.

- Hypothesis 2: Consistent use of the CSM™ Clinical Model provides an efficient method for improvement in Quality-of-Life patient goals and desired clinical outcomes.

- Hypothesis 3: Consistent application of the CSM™ Clinical Model will help validate urinary neurotransmitter testing and non-drug interventions to support patient and clinician goals.

To test these hypotheses, we created a population-based dataset. This dataset contains two groups: all patients who were tested at least once (n=17,163) and all patients who were tested three times (n=703).

(See Data Analysis Methodology Section on page 8 for further details).

THE SANESCO CSM™ MODEL, WHEN PROPERLY APPLIED, QUALITY OF LIFE SCORES

The following data are derived from a cohort of 703 patients' self-reported Quality-of-Life (QoL) measures in addition to their neurotransmitter and hormone laboratory assessments.

The QoL scores are derived from baseline and follow-up patient self-reported symptom assessment surveys that are provided with each NeuroLab® test kit. Patients in this cohort were given at least 3 HP or HPA tests and answered the questionnaire with each test.

As a matter of practice, patient questionnaire results are reviewed by Sanesco's clinical team and correlated with their HPA values. Sanesco's correlation analysis report guides recommendations for TNT™ support formulas. With each subsequent HPA test, the team analyzed the patient questionnaire information to assess the QoL measures (based on a 4-point Likert scale).

These results were then compared to baseline (Test #1) measures. The average time frame from Test #1 to Test #3 is about eight months.
Our analysis reveals that changes in patient QoL

31% **Decrease in severity** | **of self-reported patient *ANXIETY* from Test 1 to Test 3**

44% **Decrease in severity** | **of self-reported patient *AGITATIVE DEPRESSION* from Test 1 to Test 3**

42% **Decrease in severity** | **of self-reported patient *HEADACHES* from Test 1 to Test 3**

39% **Decrease in severity** | **of self-reported patient *INSOMNIA* from Test 1 to Test 3**

51% **Decrease in severity** | **of self-reported patient *NERVOUSNESS* from Test 1 to Test 3**

31% **Decrease in severity** | **of self-reported patient *IRRITABILITY* from Test 1 to Test 3**

RESULTS IN REMARKABLE IMPROVEMENT IN PATIENT

scores between the patient's first laboratory assessment (scaled to 100%) and the third lab assessment. All QoL score changes were statistically significant ($p<0.05$).

In other words, all of the patient QoL scores showed dramatic and statistically significant improvement following a therapeutic protocol using recommended TNT™ formulas.

If the practitioner follows the CSM™ model by utilizing this type of follow-up testing and QoL assessment, along with implementation of continued TNT™ recommendations, it will provide the clinician with enhanced decision-making information to monitor patient progress and the opportunity to refine their therapeutic interventions.

Taken together this work supports the hypotheses set forth above.

43% **Decrease in severity** | **of self-reported patient *VEGETATIVE DEPRESSION* from Test 1 to Test 3**

30% **Decrease in severity** | **of self-reported patient *POOR FOCUS* from Test 1 to Test 3**

42% **Decrease in severity** | **of self-reported patient *PMS* from Test 1 to Test 3**

44% **Decrease in severity** | **of self-reported patient *OCD BEHAVIOR* from Test 1 to Test 3**

17% **Decrease in severity** | **of self-reported patient *FATIGUE* from Test 1 to Test 3**

42% **Decrease in severity** | **of self-reported patient *MOODINESS* from Test 1 to Test 3**

PATIENT QUALITY OF LIFE IMPROVEMENTS CORRELATE WITH NEUROHORMONE STATUS

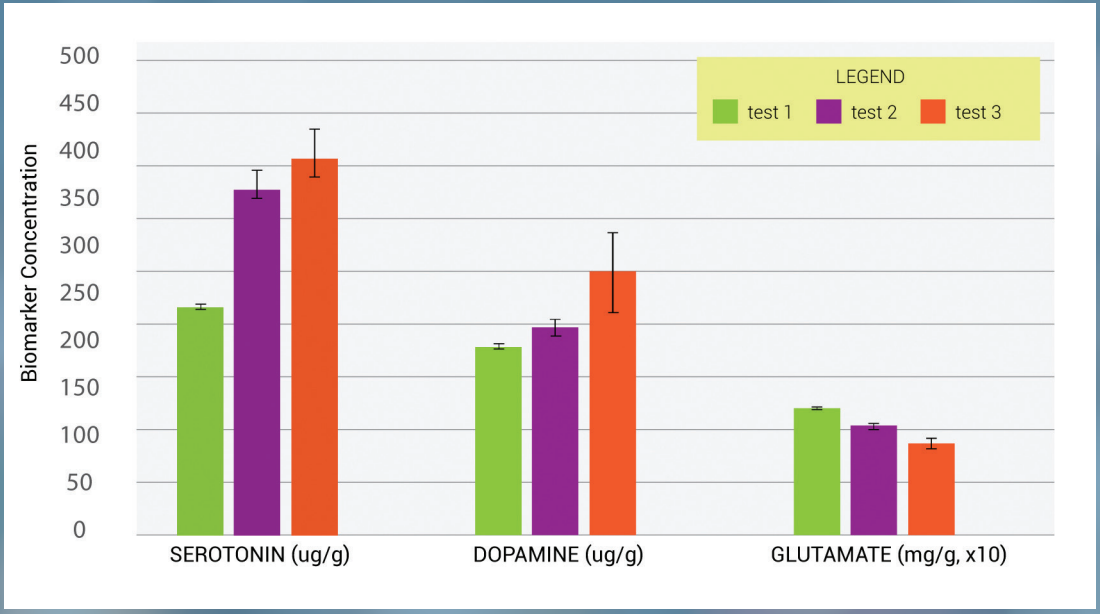
BENEFITS OF ADHERING TO THE SANESCO CLINICAL MODEL

The following is a graphical representation showing the impact of sustained application of the CSM™ clinical model. Significantly, the majority of measured neurotransmitter values changed in clinically meaningful ways and all Quality-of-Life measures improved with repeated testing and continued application of the CSM™ clinical model along with the continued use of TNT™ supplementation.

This data demonstrates that re-testing provides valuable feedback for clinicians to monitor and refine their therapeutic protocol.

The use of the CSM™ model is an active partnership between the clinician and Sanesco.

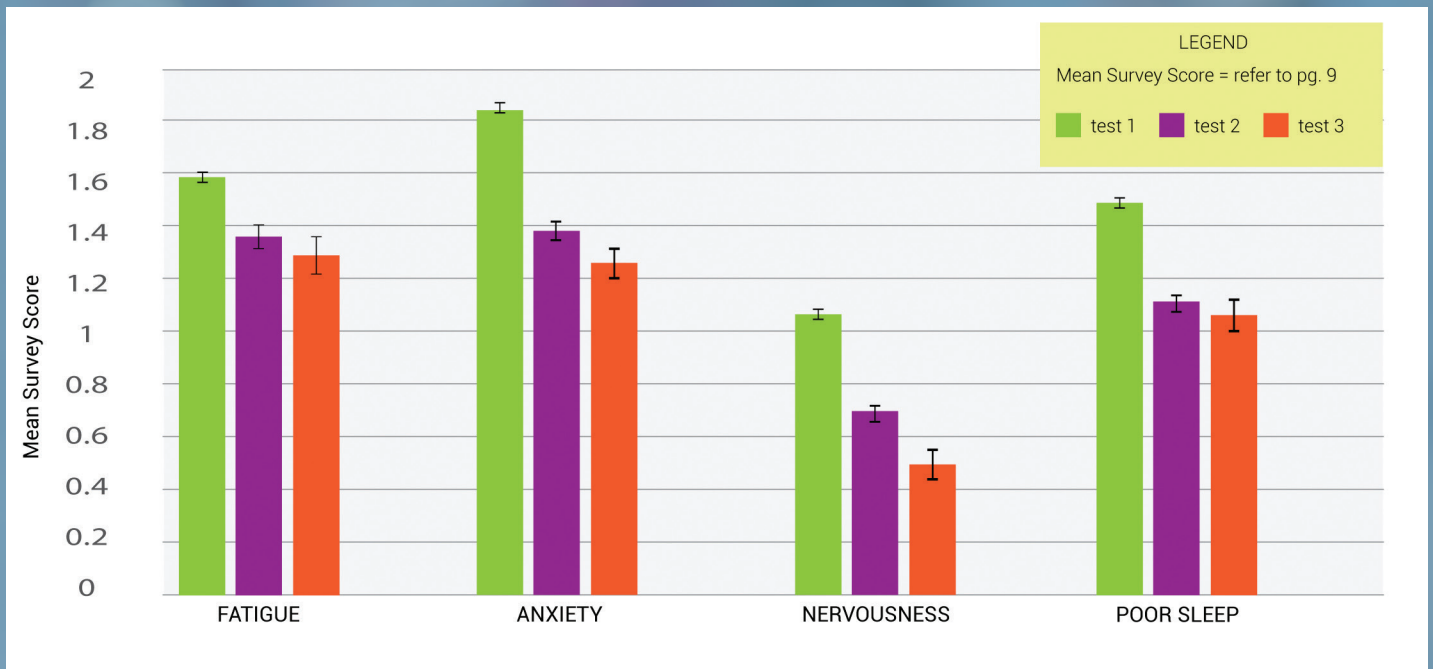
EFFECT OF CSM™ ADHERENCE ON NEUROENDOCRINE MARKERS



* REFER TO PG.8 DATA COLLECTION METHODOLOGY - POPULATION BASED ANALYSIS

Clinicians who consistently use the CSM™ Clinical model are able to efficiently balance neuroendocrine biomarkers related to HPA-T function, leading to improvement in clinical outcomes (supporting Hypothesis 3).

QUALITY OF LIFE IMPACT USING THE SANESCO CLINICAL MODEL



* REFER TO PG.8 DATA COLLECTION METHODOLOGY - POPULATION BASED ANALYSIS

SUMMARY

In this statistical analysis of roughly 20,000 unique patients, self-reported improvements in Quality-of-Life measures correlate remarkably well with improvements in key urinary neurotransmitter biomarkers. Biomarkers and QoL measures improved with adherence to the CSM™ clinical model.

That is, testing for initial benchmarks, starting a therapeutic protocol with TNT™ products, and then retesting (at least twice, in this instance) of biomarkers with adjustment of the TNT™ protocol based on repeat laboratory assessment and clinical acumen of the provider. This 703-patient cohort used NeuroLab's neuroendocrine assessments and who were taking Sanesco's TNT™ formulas. Thus, retesting and further refinement of therapeutic protocols by the clinician is the most efficient way to achieve the patient's goals and the clinician's desired outcomes.

The results of this study strongly support the experimental hypotheses of this Monograph and demonstrate strong validation for the use of urinary neurotransmitter testing in general, and specifically for the merits of the Sanesco CSM™ clinical model and TNT™ products.

DATA ANALYSIS METHODOLOGY

Bioanalytical

Urine and saliva biomarker levels were measured using proprietary LC-MS protocols, using either an AB Sciex API3000 mass spectrometer or a Waters Xevo TQD equipped with a UPLC front end. All data was collected in positive ion mode.

Data Analysis Methodology

This preliminary study does not separately assess the effect of a single Sanesco® TNT™ formula and/or combinations, but rather the impact of taking one or more TNT™ formulas while adhering to Sanesco's clinical protocol. Patients in this study took an average of 3.5 TNT™ formulas after baseline (TEST #1) assessment. Also, the results are not evaluated in relation to age, gender or other factors such as lifestyle choices and medical history.

The following assumptions were made in analyses reported herein:

1) Noise and errors are uniformly distributed in the data.

2) Noise and errors do not differ significantly between test cohorts; Variance differs among test groups.

3) Patient adherence to TNT™ protocols is equal to average observed adherence to prescription medications.

4) Patient adherence to TNT™ protocol usage is consistent within each cohort.

5) Parallel medications and interventions provided by the healthcare provider have marginal effect on bioassay data and an undetermined impact on Quality of Life measures.

6) Patients are honest in their self-assessment.

7) There is a nominal placebo effect.

8) The data input processes remain robust and relatively consistent through time.

A 1-tailed Student's-T significance test (assuming different variance in TEST #1, TEST #2 and TEST #3 data) was used to assess the level of statistical significance. In other words, to test the hypothesis that Sanesco's TNT™ formulas affect requisite biomarkers and Quality-of-Life measures.

The results are given as p-values. Note that further analysis (such as the Wilcoxon Rank Sum Test) will be required to establish more rigorously the statistical significance of this data since they are discrete scores, not continuous data.

Regression analysis was conducted and validated using StatPlus Version 6.1.7 (AnalystSoft, Inc.) and the Excel Analysis ToolPak Version 15.28 (Microsoft, Inc.). The input confidence level was set at 90%, correlation coefficient (r), standard error (SE) and related measures were calculated by standard statistical methodology.

A snapshot of the database containing only those records where patients are noted as taking Sanesco's TNT™ Formulas was manually audited. This yielded 20,140 unique records, of which 11,137 were females and 9,003 were males.

Population-Based Dataset

There were three cohorts of patients in this study: Those who completed a baseline (Test #1), a repeat test (Test #2), and those who repeated a third test (Test #3). All testing herein occurred over the course of about 8 months. The baseline (TEST #1) cohort all did an initial biomarker assessment (HP or HPA test) and completed Quality-of-Life questionnaires prior to the administration of the Sanesco® TNT™ formula protocol.

That is, they were TNT™ formula naïve. This group contained 17,163 unique patients. The cohort of patients receiving a second test (TEST #2) contained 2,274 unique patient records, while 703 unique patients are included in the cohort that was tested a third time (TEST #3).

Quality of Life (QOL) Self-Assessment

Patients receive the symptom assessment surveys with each test kit, fill it out at home, and send it in with their collected urine and saliva samples. The self-reported QoL measures, are given on a severity scale from 0 to 4, with 4 being most severe.

Mean Survey Score Formula (pg.6)

x_i - severity score for a given QoL indicator (x) and patient (i) using Likert-type quantitative scale [0-4]
n - total number of patients who responded to a particular QoL indicator (x)

$$mean\ survey\ score = \frac{\sum_1^n x_i}{n}$$

Sanesco® and NeuroLab® deeply value the relationship we share with our customer, the healthcare provider. Through continued education, quality improvement, and research we are committed to supporting clinicians in their work to bring healing and wellness to their patients. Effective and consistent use of the CSM™ clinical model can be an integral part of that goal.

Please visit our website or contact us directly to learn more about the safety and efficacy of the CSM™ Clinical Model.

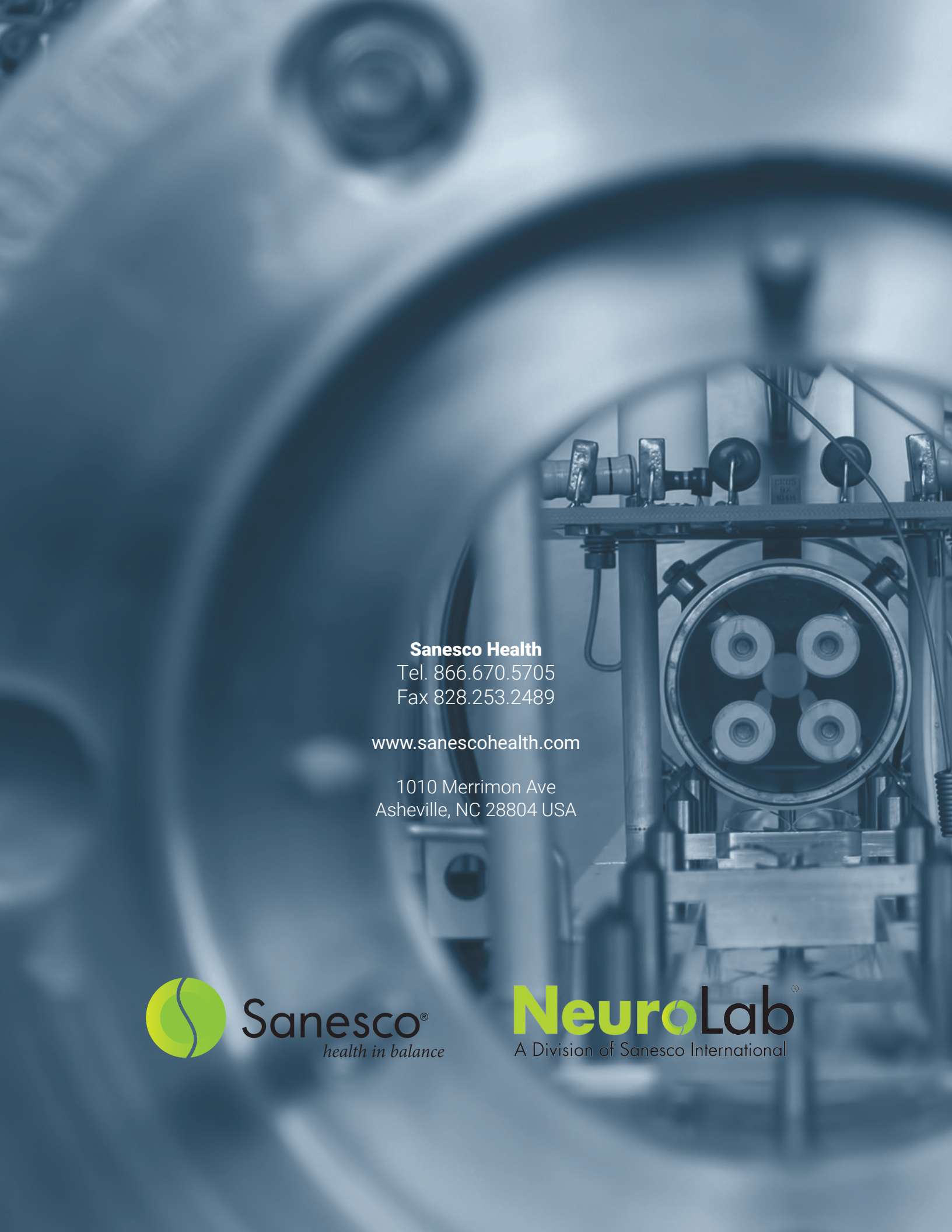
NCAP™

NEUROENDOCRINE CLINICAL ANALYSIS PROGRAM

We have strategically designed NCAP™ to marry theory with practice, so you may begin reaping the benefits of Sanesco's CSM™ Clinical Model immediately.

- Grasp advanced concepts in neuroanatomy and HPA-T axis function and the emergence of symptoms associated with HPA-T axis imbalance
- Gain insight into neurotransmitter analysis testing methods, highlighting the analytical validity of NeuroLab's urinary HPLC Mass Spectrometry over other neurotransmitter testing methods
- Develop detailed understanding of the ingredients and mechanisms of action in our professional line of Targeted Nutritional Therapy™ formulas

Register for NCAP™ Accreditation at sanescohealth.com/ncap



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