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Sentra AM

Summary （概要）

Sentra AM is designed to increase acetylcholine production in the brain and autonomic nervous system. Sentra AM is designed to increase mental arousal, cognitive function, and improve autonomic nervous system function. Autonomic nervous system function controls memory, mental acuity, sleep, temperature regulation, muscle performance, blood pressure, heart rate, and appetite. Reduced parasympathetic activity is associated with generalized chronic fatigue, muscle tremors, lack of muscle coordination, altered memory, inability to concentrate and excessive sweating. Sentra AM has been shown to ameliorate the effects of environmental pollutants, such as smog, on mental acuity and ability to concentrate. Sentra AM contains acetylcholine precursors along with the stimulatory neurotransmitter glutamate and adenosine inhibitors.

Sentra AM **は脳と自律神経系でアセチルコリンの合成を増進させるように設計されています。また、**Sentra AM **は精神的な高揚、認識機能、自律神経系機能が向上するように設計されています。自律神経系機能は記憶、精神的な鋭敏さ、睡眠、体温調整、筋肉の働き、血圧、心拍、食欲をコントロールしています。特に副交感神経の活動の減退は慢性疲労、筋肉の痙攣、筋肉の整合の欠如、記憶障害、集中力の欠如、多汗症を引き起こします。**Sentra AM **はスモッグなどの環境汚染物質が精神的な鋭敏さや集中力に及ぼす悪い効果を改善することが示されています。**Sentra AM **にはアセチルコリンの前駆物質、神経伝達物質の刺激剤のグルタメイトとアデノシン抑制成分が含まれています。**

Neurotransmitters and brain function
神経伝達物質と脳の機能

Acetylcholine is the primary chemical messenger or neurotransmitter in the brain(1-15). Acetylcholine controls both short and long-term memory through its action on the hippocampus, the memory center of the brain(16-38). Acetylcholine is intimately involved in all areas of the brain and is the primary neurotransmitter controlling muscle function(39-80). Acetylcholine controls muscle coordination through its action in the cerebellum where it is the primary neurotransmitter. The reduction of acetylcholine concentration in nerve cells will affect multiple brain centers. Acetylcholine production is directly related to the availability of choline.

アセチルコリンは脳の主要な化学的メッセンジャー、もしくは神経伝達物資です。アセチルコリンは脳の記憶中枢である海馬で長期短期両方の記憶をコントロールしています。アセチルコリンは脳全体に非常に親密に関わり、筋肉機能をコントロールする主要な神経伝達物資です。アセチルコリンは主要な神経伝達物質が存在する小脳での活動を通して、筋肉の整合をコントロールしています。神経細胞におけるアセチルコリン濃度の減少は複数の脳の中枢に影響をもたらします。アセチルコリンの合成は直接的にコリンの量に関係してきます。

Acetylcholine and Peripheral Muscle Function
アセチルコリンと抹消筋肉機能

Initiation of muscle contraction depends on the release of acetylcholine from nerve cells that initiate muscle contraction. Reduced acetylcholine release by peripheral neurons results in reduced force of muscle contraction, and this in turn causes fatigue, reduced muscle performance, and reduced muscle coordination.

筋肉の収縮の始まりは神経細胞からのアセチルコリンの放出に左右されます。末梢神経によって放出されるアセチルコリンの量が少ないと筋肉を収縮させる力が弱くなり、またこれが疲労、筋力の衰え、筋肉の整合の欠如の原因となります。

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Acetylcholine and Mental Arousal
アセチルコリンと精神的な高揚

Activation of acetylcholine in the brain cortex is necessary for brain arousal, mental acuity and concentration(81-89). When the brain shifts from quiet wakefulness to mental alertness to solve problems, there is an acute activation and release of acetylcholine. This production of acetylcholine is necessary for concentration, attention, and problem solving.
大脳皮質におけるアセチルコリンの活性化は、精神の高揚、鋭敏さ、集中力にとって必要です。脳が静かに休んでいる状態から、問題解決に向けてスイッチが入った時に、アセチルコリンの鋭い活性化と放出が始まるのです。アセチルコリンの合成は集中、注意、問題解決にとって必要です。

Acetylcholine and Environmental Toxins
アセチルコリンと環境毒素

Many environmental toxins such as pesticides(90-94), smog(95-99), and airborne particles(100) cause damage to the autonomic nervous system and alter autonomic nervous system function, attacking both acetylcholine and the enzyme acetylcholinesterase that scavenges choline allowing its recycling. In addition, many of the agents that may become chemical weapons are nerve gases that function by altering the acetylcholine and acetylcholine esterase systems(101-104). This damage to the acetylcholine systems results in depletion of the choline and glutamate systems in the brain(105-119). Affected individuals experience functional symptoms related to acetylcholine deficiency, including memory disorders, cognitive disorders, chronic fatigue, body temperature dysregulation, sleep disorders, and sexual dysfunction. The Sentra AM product is designed to replace the depleted acetylcholine components in the brain and peripheral neurons.
殺虫剤、スモッグ、空気伝達の分子など多くの環境毒物は、アセチルコリンとコリンをリサイクルさせるアセチルコリンエステラーゼ酵素の両方を攻撃することによって、自律神経系にダメージを与え、その機能を変質させる原因になります。加えて、化学兵器になりうる多くの物質の一つに神経ガスがあり、それはアセチルコリンとアセチルコリンエステラーゼを変質させてしまう機能があります。このアセチルコリンシステムへのダメージは脳のコリンとグルタミン酸システムの枯渇をもたらします。こうした影響を受けた人々は、アセチルコリンの枯渇に伴う症状（記憶障害、認識障害、慢性疲労、体温の調整障害、睡眠障害、性機能障害）を経験します。Sentra AM **は脳や末梢神経で空になったアセチルコリンを補充するようにデザインされています。**

We have a three-year clinical experience with the Sentra products in patients who were exposed to neurotoxins from an accidental chemical release. These patients have shown improved symptomatic function and reduced signs of autonomic dysfunction after treatment.
事故によって化学物質が放出して、その結果神経毒物に曝されてしまった患者に対して、我々は3年間に及ぶ Sentra AM **および** PM **の臨床経験があります。**Sentra AM＆PM **による治療の後、症候的な機能の回復と自律神経障害の症状の回復が見られました。**

The FDA has approved an IND under the Orphan Drug Act to allow the use of Sentra, in combination with another agent in humans who were exposed to phosgene and nitrogen mustard during an industrial accident. A major ingredient in Sentra is choline. Choline has been approved by the FDA with the general health claim that choline improves human brain function. Choline is known to improve memory, cognitive functioning particularly during stress, and muscle strength.
FDA（**米国食品医薬品局**）**はオーファンドラッグ法のもと、**Sentra AM＆PM（**以降** Sentra）**を他の薬とのコンビネーションで、工業事故によってホスゲンやナイトロジェンマスタードに曝された人の治療に使用することに対して** IND（**治験新薬申請**）**を認可しました。**Sentra **の一番重要な成分はコリンです。コリンは人間の脳の機能を向上させる働きがあるという効能をうたうことを** FDA **によって認められています。コリンは記憶、（特にストレス中の）認識機能、筋力を向上させるということが知られています。**

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Sentra - Unique Properties
Sentra シリーズの特異性

Sentra is a unique oral formulation that activates the neurotransmitters that have been depleted after exposure to toxic substances.

Sentra は、毒性の物質に曝された後に欠乏してしまった神経伝達物質を活性化させる、他に類のない口から摂取するフォーミュレーションです。

Sentra has been developed over the last 7 years and patients taking this agent have undergone extensive physiologic testing and over a three year period. Sentra incorporates a patent pending, five-component system including neurotransmitter precursors, precursor uptake stimulation, neuron activation, and release of a brake on a specific neuron function. The formulation produces acetylcholine, serotonin, and nitric oxide in sufficient concentrations to elicit a physiologic effect. Elimination of any of the five components of the system results in loss of physiologic effect. For example, administration of choline alone will not elicit the same response.

Sentra は、7年以上の歳月をかけて開発され、3年以上に亘って実際の患者を使って広範囲におよぶ生理学上のテストが実施されてきました。Sentra は特許申請中の5つの構成要素から成り立っています。

1：神経伝達物質の前駆物質
2：前駆物質の神経細胞への吸収を高める物質
3：神経細胞を活性化させる物質
4：神経伝達物質の放出を刺激する物質
5：耐性ができないようにする物質。

フォーミュレーションは生理学上の効果を引き出すに足りる濃度のアセチルコリン、セロトニン、一酸化窒素を作り出します。5つの構成要素うち一つでも欠けると、生理学上の効果を生まない結果になります。例えば、コリンだけは同じ効果は引き出すことはできません。

Sentra is designed to augment rather than replace existing therapies. For example, Sentra can be administered with either atropine or pyridostigmine.

Sentra は現在の治療法に置き換わると言うよりは、そういったものの効果を高めるように設計されています。例えば、アトロピン（副交感神経抑制剤）やピリドスティグミンのいずれかと一緒に処方することが可能なのです。

The relative proportions of the components in Sentra have been determined utilizing proprietary testing of autonomic nervous system function that allows for indirect measurement of neurotransmitter production in humans

Sentra の成分の構成比率は、人間の神経伝達物質の合成を間接的に計ることができる自律神経系機能の独自のテストによって決まりました。

Sentra is administered orally and is given twice daily. The dose can be increased when there is a known chemical exposure.

Sentra はサプリメントとして1日2回飲みます。化学物質に曝されていると分かっている場合は量を多くしても構いません。

Sentra has a long shelf life and can be exposed to extremes of heat and cold.

Sentra の有効保管期限は長く、温度に対して極端な環境に曝されても大丈夫です。

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Nerve Gases—VX and Sarin
神経ガス−VX とサリン

The defect induced by exposure to the nerve gas class including VX and Sarin is inhibition of acetylcholinesterase with depletion of intracellular choline and acetyl groups.

VX やサリンといった神経ガスに曝されたことによって引き起こされる問題は、細胞内のコリンとアセチルグループの欠乏に伴って、アセチルコリンエステラーゼ酵素の分泌を抑制することです。

Sentra provides both choline and acetyl groups in a formulation that activates uptake.

Sentra は細胞への吸収を活性化させるそのフォーミュレーションの中で、コリンとアセチルグループを提供します。

Sentra activates the NDMA receptor that allows function of neurons with damaged acetylcholine function.

Sentra は損傷したアセチルコリン機能をもった神経細胞を機能させる NDMA 受容体を活性化します。

Sentra enters the brain where current treatment agents such as pyridostigmine cannot enter because of the blood-brain barrier.

Sentra はピリドスティグミンのような現在の治療薬が血液脳関門の為に入り込めない、脳の部分に入り込みます。

Evidence exists that in battlefield participants, the defect associated with VX and Sarin is reduced choline in key brain cells

VX やサリンに伴った問題は、脳細胞の中のコリンが減少しているということで、戦場で戦う戦士達が証明しています。

Cyanide (CN)
シアン化物

The defect induced by CN is inhibition of NDMA receptor and Heme containing molecules such as hemoglobin in the blood. This exposure leads to respiratory and heart damage that will lead to death unless treated.

シアン化物によって引き起こされた問題は、NDMA 受容体と血液中のヘモグロビンなどの分子を含むヘムを抑制することです。これに曝されると治療をしない限りは死へと導かれる可能性のある呼吸と心臓のダメージに繋がります。

Sentra provides glutamate to activate NDMA receptors to produce nitric oxide that protects against CN.

Sentra はシアン化物から守る一酸化窒素を作り出す NDMA 受容体を活性化するグルタミン酸を提供します。

Sentra provides glutamate to compete with CN for NDMA sites until the CN is destroyed in the blood.

Sentra はシアン化物が血液中で破壊されるまで NDMA の為に戦うグルタミン酸を提供します。

CN activates the sympathetic nervous system while Sentra activates parasympathetic nervous system to modulate cardiac damage induced by CN.

シアン化物による心臓のダメージを柔らげる副交感神経系を Sentra **が活性化している間に、シアン化物は交感神経系を活性化させます。**

Sentra provides choline and acetyl groups to minimize the CN damage to energy systems.

Sentra **はシアン化物によるエネルギー系のダメージを最小限に食い止める為にコリンとアセチルグループを提供します。**

Sentra increases nitric oxide by activating the NDMA receptor. Nitric oxide directly competes with CN on the NDMA receptor. The nitric oxide on the receptor protects it while the CN is destroyed in the blood.

Sentra **は** NDMA **受容体を活性化させることで一酸化窒素を増量させます。一酸化窒素は直接的に** NDMA **受容体上でシアン化物と戦います。受容体上の一酸化窒素はシアン化物が血液中で破壊させる間、** NDMA **受容体を守ります。**

Pesticides
殺虫剤

The defect induced by organophosphate pesticides is the inhibition of acetylcholinesterase with depletion of intracellular choline and acetyl groups that leads to memory defects, difficulty breathing, and muscle weakness.

有機リン酸塩系殺虫剤によって引き起こされた問題は、記憶障害、呼吸障害、筋肉の弱体化を引き起こす細胞内のコリンとアセチルグループの枯渇をともなうアセチルコリンエステラーゼ酵素の抑制です。

Sentra activates the NDMA receptor that allows function of neurons with damaged acetylcholine function to repair memory, muscle strength, and lung damage.

Sentra **は記憶、筋力、肺の損傷を修理する役目のアセチルコリンを伴う神経細胞を機能させる** NDMA **受容体を活性化します。**

Sentra enters the brain where other treatments do not.

Sentra **は他の治療薬が入れない脳の領域に入り込みます。**

Nitrogen Dioxide- NO2—Smog
二酸化炭素–スモッグ

Concentrations of NO2 are elevated compared to normal under conditions of visible smog, particularly in the presence of combustible coal burning fuels. The increase in concentration can be 500 to 1000 times normal in the air during visible smog.

特に燃焼性の石炭燃料があるところでは、目に見えるスモッグの平常の状態と比べても二酸化炭素の濃縮レベルは高くなっています。濃縮レベルが高くなっている状態では、通常の５００倍から１０００倍の濃度まで上がります。

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The defect induced by ambient NO2 is inhibition of NDMA receptors and reduced choline containing neurons— A recent University of Texas double blind matched control study proved the defect induced by NO2 using PET and Spectral MRI imaging in humans.
周囲を取り囲む二酸化炭素によって引き起こされた問題は、NDMA **受容体を抑制し、神経細胞に含まれるコリンを減少させます。最近のテキサス大学が実施したダブルブラインドテストでは、**PET **やスペクトラム** MRI **映像を使って、二酸化炭素によって引き起こされた問題が証明されました。**

Sentra provides both choline and glutamate to the damage induced by NO2 to the NDMA receptors.
Sentra **は二酸化炭素によって引き起こされた** NDMA **受容体へのダメージを改善するためにコリンとグルタミン酸の両方を提供します。**

Three year human experience shows that Sentra can reverse symptoms and repair autonomic defect induced by high concentration of NO2.
三年間にわたる臨床を通して Sentra **は高い濃度の二酸化炭素によって引き起こされた症状を好転させ、自律神経障害を治すことができることを証明しました。**

Phosgene/Nitrogen Mustard
ホスゲン／ニトロジェンマスタード

The defect induced by phosgene is parasympathetic nervous system dysfunction. Recent experience with exposure to phosgene in Louisiana in year 2000 using testing of parasympathetic function to assess defect induced by phosgene
ホスゲンによって引き起こされた問題は、副交感神経系の機能障害です。2000 **年にルイジアナでホスゲンに曝された経験が、その問題を評価する副交感神経機能のテストに使われました。**

Sentra provides choline and acetyl groups to minimize defect to the parasympathetic nervous system thus preventing memory loss, breathing difficulty, and muscle weakness
Sentra **は記憶障害、呼吸障害、筋肉の弱体化を予防する為に副交感神経系の問題を最小限にするコリンとアセチルグループを提供します。**

Recent FDA IND approval for the use of Sentra to treat phosgene exposure.
最近 FDA IND **はホスゲンに曝された場合の治療に** Sentra **を使用することを認可しました。**
(FDA IND＝**食品薬品局、新薬調査制度**)

Side Effects of Sentra
Sentra の副作用

In a three year human clinical experience there are no know side effects of Sentra

三年にわたる人体臨床テストの結果、Sentra **には副作用がないことが分かりました。**
Patients exposed to neurotoxins have reduced symptoms and improved parasympathetic function when treated with Sentra. Parasympathetic function has been measured objectively
神経毒物に曝された経験があり、Sentra **で治療したた患者はその症状が薄らぎ、副交感神経機能が向上しました。**

Sentra does not cause reduced mental alertness as other treatments do
Sentara **は他の治療のように、精神的な敏捷性を減少させるものではありません。**

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Potential Benefits of Choline Administration in Environmental toxicity
環境毒性におけるコリンの潜在的な有用性

FDA has approved a health claim for choline of improved memory, alertness and brain function

FDA は、記憶、警戒心、脳の機能の向上といったコリンの健康上の効能を認めています。

Choline has known beneficial effects on memory, muscle strength, visual acuity and alertness

コリンは記憶、筋力、視力、警戒心において有用な効果があることが知られています。

In conjunction with Dr. Robert Haley, at the University of Texas, Southwestern we have been examining two groups of patients who had suffered environmental exposures. The first exposed group of subjects included members of the military who were exposed to a number of chemical agents during the Persian Gulf War. The agents were thought to include low levels of nerve gas, as well as heavy air pollution from oil fires.

テキサス大学サウスウェスタン校のロバートハーリー博士の協力で、環境汚染に曝された二つの患者グループのテストをすることができました。最初のグループは湾岸戦争時にいくつもの化学物質にさらされた米軍関係の人が含まれていました。汚染物質は低いレベルの神経ガスとオイルの燃焼による高度な大気汚染が含まれていると考えられます。

As described in the attachments, along with Dr. Haley, we have extensively studied patients exposed to nerve gas agents at a weapons dumpsite in Southern Iraq in 1991. As control subjects we have examined members of the same group who were either not in the Gulf or were not at the dumpsite. These exposed subjects experienced the symptoms of acetylcholine deficiency including sleep disorders, cognitive disorders, memory disorders, muscle weakness, chronic fatigue, and lack of muscle coordination. In addition, these patients have frequent infections, also a sign of parasympathetic dysfunction. These patients have visual brain defects as measured by SPECT scan and have reduced brain choline concentration as measured by spectral MRI.

1991年にイラク南部の兵器廃棄場で神経ガスに曝されてしまった患者の広範囲にわたる研究をロバートハーリー博士と一緒に行いました。比較テストの上で同じグループに属しているが、湾岸戦争にいなかったか、もしくは廃棄場にいなかった人をテストもしました。実際に化学物質に曝された患者達は、アセチルコリン欠乏の症状である睡眠障害、認識障害、記憶障害、筋肉の弱体化、慢性疲労、そして筋肉の整合の欠如が見られました。これに加え、こういった患者は頻繁に感染し、副交感神経の機能障害の徴候もありました。これらの患者は SPECT で測定した時に目で見て分かる脳の欠陥が発見され、スペクトラル MRI で計った時には脳のコリンの濃度の減少が見られました。

In 1995, there was a large accidental chemical release of nitrogen tetroxide after a rail car explosion. N_2O_4 is also used as rocket fuel in both the American Shuttle and the Scud rockets. When nitrogen tetroxide is exposed to air it breaks down to nitrogen dioxide, a major constituent of smog. We have studied this large industrial exposure as a model for human smog exposure. The people exposed to the nitrogen dioxide experience the symptoms associated with acetylcholine deficiency including cognitive disorders, memory disorders, sleep disorders, muscle tremors, muscle weakness, lack of coordination, and chronic fatigue.

1995年に大規模な化学事故が発生し、列車が爆発した後に四酸化窒素が放出ました。この N_2O_4 はアメリカンシャトルとスカッドロケットにもロケット燃料として使われています。四酸化窒素が大気に曝された時に、それはスモッグの構成要素の二酸化窒素に分解しました。我々はこの大事故を人間がスモッグに曝された場合のモデルとしてとらえ研究してきました。二酸化窒素に曝された人々は、アセチルコリンの欠乏に伴う、認識障害、記憶障害、睡眠障害、筋肉の痙攣、筋肉の弱体化、筋肉の調整欠如、慢性疲労といった症状を経験しました。

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We have recently completed an extensive evaluation of some of the patients who were victims of the NO4 release. Objective physiological testing included quantitative audio vestibular testing of cranial nerve function, positron imaging (PET scanning) and spectral MRI imaging of choline and glutamate concentrations in the brain. The control group included individuals who were not in the city at the time of the exposure but lived near the plant both before and after the large exposure to nitrogen dioxide.

我々は最近、四酸化窒素の放出の被害者である患者数人の広範囲にわたる評価を完了しました。テストの内容は、頭蓋骨神経機能のテスト、PET スキャンテスト、スペクトラル MRI による脳内のコリンとグルタミン酸の濃度テストです。比較対象グループには、爆発時には市内にいなかったが、爆発の前後も工場の近隣に住んでいる人達が選ばれています。

The PET scans were abnormal showing significant areas of increased blood flow in several areas of the brain in the exposed subjects. These areas included the hypothalamus, the thalamus, the tracts leading from the cortex to the cerebellum, and the midbrain in the region of the 9th and 10th cranial nerves. These are the types of lesions that are precursors to early cell death and harbingers of early cognitive and motor disorders.

PET **スキャンでは爆発に曝された人たちの脳の数カ所に増大した血流がある異常箇所が示されています。こうした箇所は、視床下部、視床、皮質から小脳へ導かれる道、そして第9、第10頭蓋骨神経地域の中脳などです。これらはある種の傷害で、前駆物質が早い段階で細胞が死んでしまうことと、初期の認識障害、動作障害の前兆です。**

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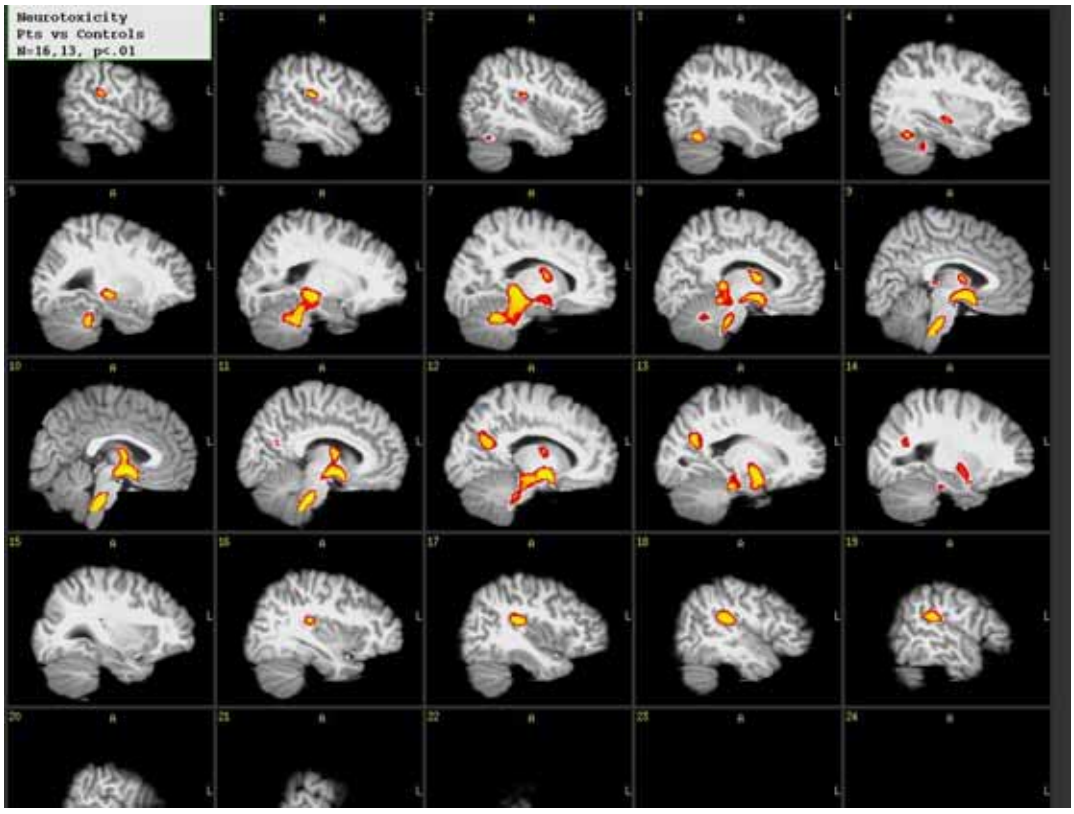
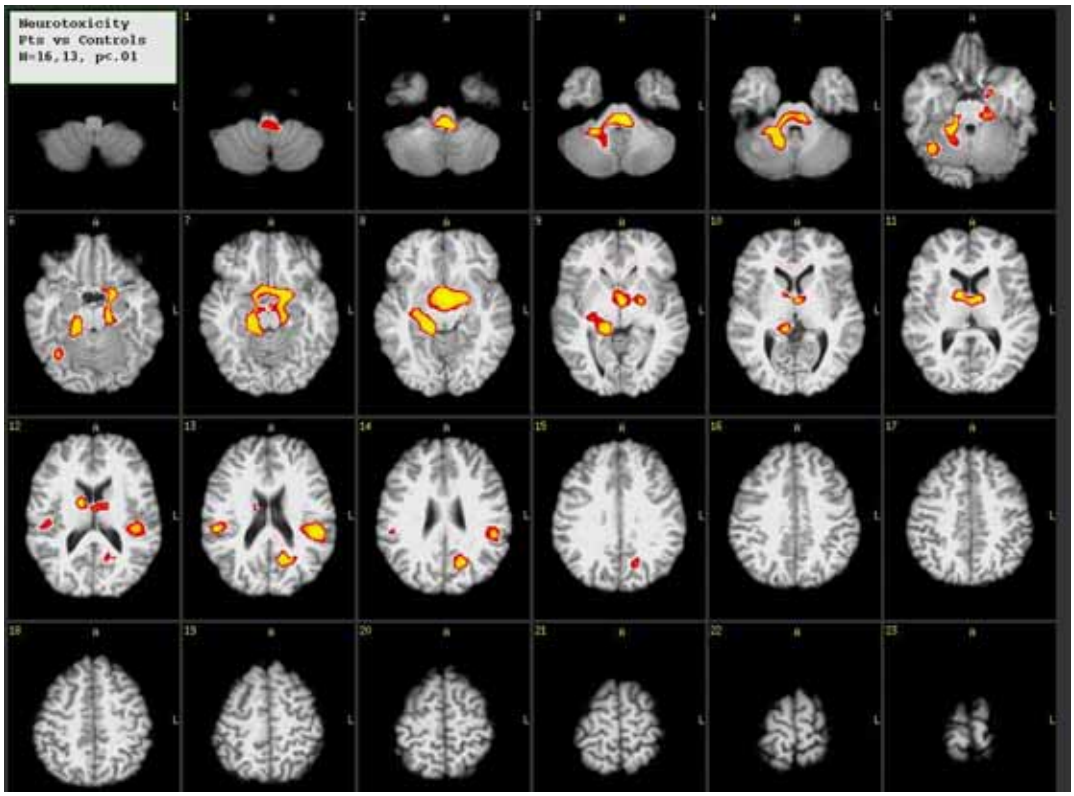
The following images demonstrate the areas of the brain most affected by exposure to environmental toxins.
次の画像は環境毒素に曝されることによって最も影響を受けた脳のエリアを表しています。





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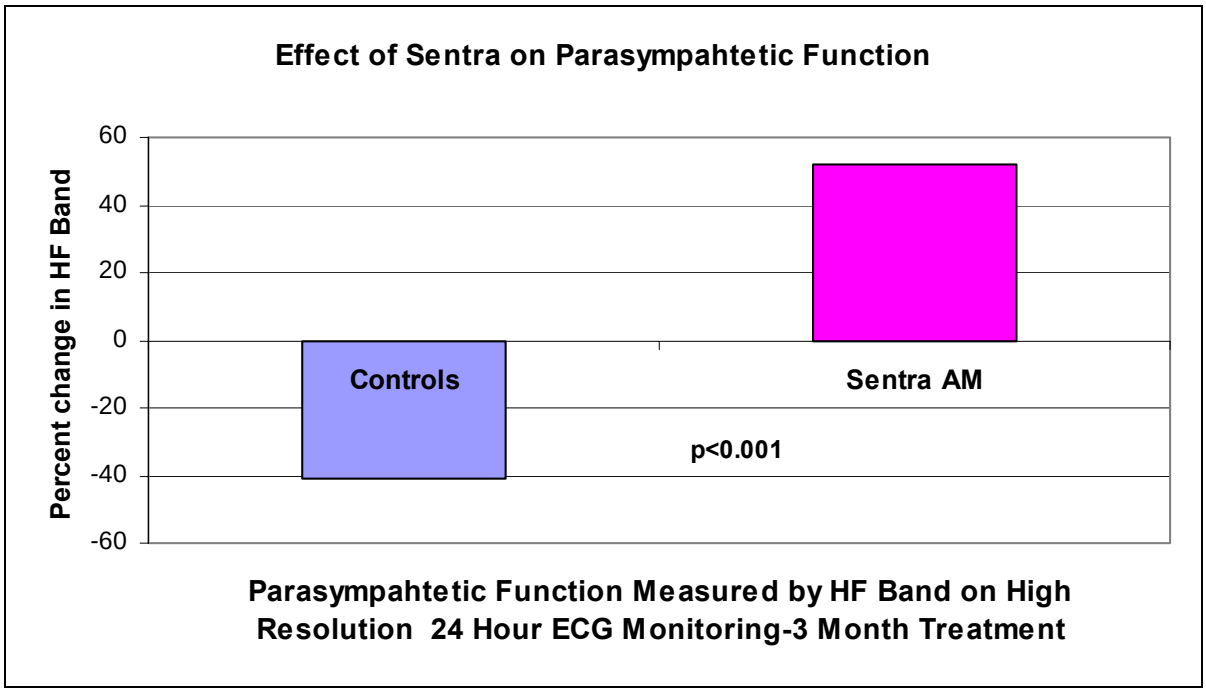
Improved Parasympathetic Function in Diabetics
糖尿病患者の副交感神経機能の向上

When the spectral MRIs were performed, the analysis showed reduced glutamate and choline concentrations.
スペクトル MRI **が示すように、グルタミン酸とコリンの濃度の減少が見られます。**

We have been conducting an open label study of Sentra in these patients for more than two years. We have been using both symptoms and objective testing methodologies to assess efficacy. To test efficacy we have used high-resolution 24-hour ECG recordings of heart rate variability as the end point. The high frequency band of the spectral analysis of heart rate is specific for parasympathetic acetylcholine dependent function. In the treated patients we measure the HF band before and periodically after treatment. We have found that the patients respond symptomatically to the Sentra products. There is a significant increase in the HF band indicating increased parasympathetic function

我々は2年以上にわたった患者を使った Sentra **のオープンラベルスタディー（製品を公表して行う実験）を指揮してきました。我々は効果を評価する為に症候と客観的なテスト方法を用いました。**Sentra **の効果をテストする為に高解像度の24時間** ECG **心拍記録装置を使用しました。心拍のスペクトル分析の高周波数帯は副交感神経アセチルコリン依存機能を明確にします。治療を受けている患者の** HF **バンドを治療の前と定期的に後にも測定をいたしました。我々は患者の** Sentra **製品に対する徴候を示す反応を発見しました。副交感神経機能の向上を示す** HF **バンドに顕著な上昇が見られました。**

副交感神経機能における Sentra **の効果**



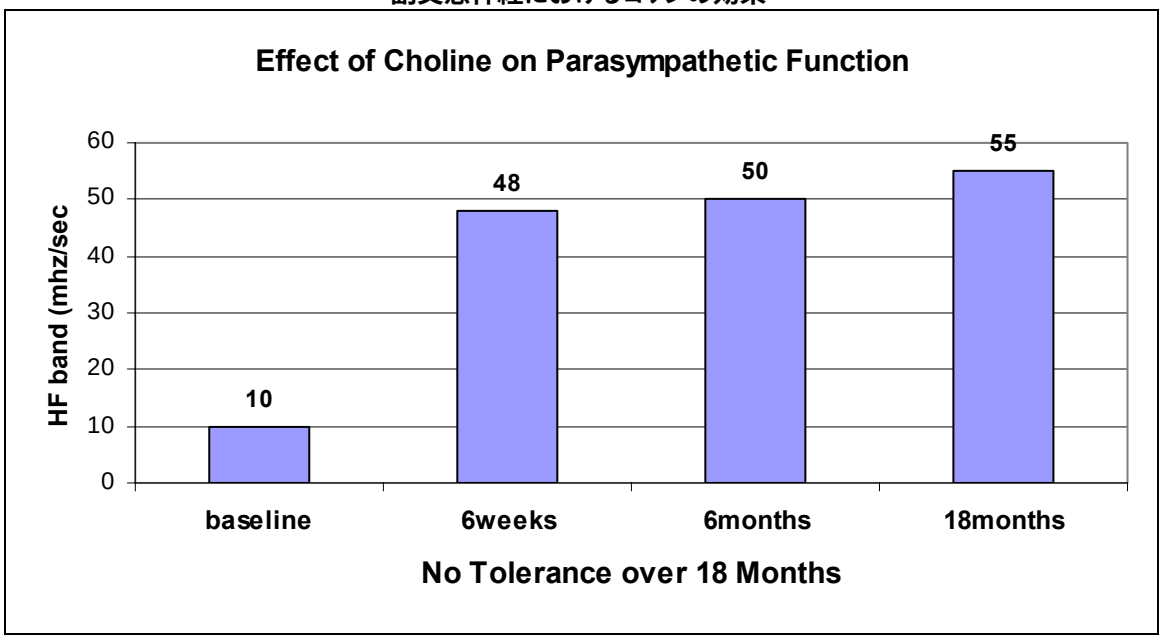
The reorder rate of the Sentra products for these

patients has been greater than 70%. Patients have reported that they have been able to regularize their sleep patterns, improve memory and cognitive function, reduce fatigue, and increase muscle strength and coordination.
Sentra **製品の患者からの再注文率は７０%を超えます。患者は睡眠パターンが定着し、記憶力と認識機能が向上し、疲労が減少し、筋力とその整合が向上したと報告しています。**

Sentra and Diabetes Mellitus
Sentra と糖尿病

Deficit in acetylcholine metabolism occurs in diabetes mellitus. Before the symptomatic onset of neuropathy, diabetics experience autonomic dysfunction as measured by reduced HF band on Heart Rate Variability testing. This is an objective testing methodology that measures parasympathetic function. We have treated a limited number of diabetics with Sentra. They have responded by resolution of the early symptoms of diabetic neuropathy. They have also normalized their HF parasympathetic function. There is no known preventative treatment for diabetic neuropathy.
糖尿病においてはアセチルコリン代謝不足がよく見られます。神経障害の徴候が出る前に、糖尿病患者は心電図テストの HF **バンドの減少によって自律神経の機能障害を経験します。これは副交感神経機能を測定する客観的なテスト方法です。我々は** Sentra **で限られた人数の糖尿病患者の治療を経験があります。糖尿病患者の神経障害の初期症状を分析することで反応し、**HF **副交感神経機能を常態に戻しました。残念ながら、糖尿病の神経障害に対する予防方法は分かっていません。**

副交感神経におけるコリンの効果



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Choline and Health Claims
コリンと健康に対する効能･効果

The FDA has approved a health claim for choline. Choline can be used to improve human memory and cognitive function.
FDA はコリンの健康に対する効能を認めています。コリンは人間の記憶と認識機能の向上に使用することができます。

Sentra and Alzheimer's Disease
Sentra とアルツハイマー

Alzheimer's disease is characterized by reduced choline and glutamate concentrations in the brain(120-137). Pharmacologic treatment of Alzheimer's disease is directed toward inhibiting acetylcholinesterase in order to increase acetylcholine availability. Sentra has not yet been tested in patients with Alzheimer's disease.
アルツハイマー病は脳におけるコリンとグルタミン酸の濃度の減少が特徴です。アルツハイマー病の薬理学的治療は、アセチルコリンの量を増やす為に、アセチルコリンエステラーゼ酵素を直接的に抑制するものです。Sentra はアルツハイマー病の患者へのテストはまだ実施していません。

Sentra and the FDA
Sentra と FDA

Targeted Medical Foods has an approved IND, issued under the Orphan Drug Act, to study Sentra, alone and in combination with piracetam, for treatment of reduced parasympathetic activity associated with certain environmental toxins.
ターゲットメディカルフードは Orphan Drug Act において、Sentra の研究で単体として、またピラセタムとのコンビネーションで環境毒性に伴う副交感神経活動低下の治療に IND (新薬申請用試験) の認可を受けました。

Sentra Functional Attributes
Sentra の機能上の属性

Sentra AM contains the precursors to acetylcholine, choline and acetyl groups along with the neuron activator glutamate. Sentra improves parasympathetic function, reduces heart rate and reduces blood pressure.
Sentar AM は神経活性化物質のグルタミン酸と共にアセチルコリンの前駆物質、コリン、アセチルグループが含まれています。Senta は副交感神経機能を向上させ、心拍を抑え、血圧を下げます。

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