RXSOLUTIONS PRODUCT GUIDE

RxSolutions
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To our providers,

The following is a summary of our products along with information based on our current understanding and understanding of the individual components of each product.

The information presented on the following pages will be presented with the intent of providing information in a succinct manner. Evidence to support the rationale for individual components will be available upon request.

Please contact us if you have any questions.

Thank you,
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MEDICATION LIBRARY TEMPLATE

CLINICAL USE AND CLINICAL PEARLS

DOSAGE FORM AND ADMINISTRATION

MECHANISM OF ACTION

TIME FRAME

CONTRAINDICATIONS

WARNINGS/PRECAUTIONS

MONITORING

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RX SOLUTIONS PRODUCT LIBRARY

1. GENERAL DIETARY RECOMMENDATIONS
2. ALPHA LIPOIC ACID/N ACETYL CYSTEINE/ COENZYME Q10/ ARGININE
3. BPC 157 AKA PENTADECAPEPTIDE
4. INOSITOL/NALTREXONE/BUPROPION/CHROMIUM
5. LITHIUM/PROPRANOLOL/THEANINE/TAURINE/ MAGNESIUM GLYCINATE
6. LOW DOSE NALTREXONE/MAGNESIUM GLYCINATE
7. SAFFRON WITH AMINO ACID AND COFACTORS
8. SEMAGLUTIDE
9. SERMORELIN

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GENERAL DIETARY RECOMMENDATIONS

Overall goal
Medications used for weight loss may decrease hunger and appetite which can lead to ingesting less calories which can put your body in a caloric deficit state. In this state, the body begins to break down muscle as a source for fuel and energy. Because of this, we are highly recommending increasing protein intake and increasing exercise to counter this.

- Protein 0.7 - 0.9 grams per pound per day
- Decrease carbohydrate intake to less than 50 grams per day

Protein

- Include all meats and seafood including beef, pork, venison, foul, organ meats, fish, shelled seafood etc…
- Eggs
- Dairy: hard cheeses, cottage cheese, heavy cream, greek yogurt
- Whey protein supplements - high quality (mix ½ unflavored with ½ flavored)
- Limit processed meats
- Limit nuts (high in oxalates) and legumes (high in carbohydrates)

Vegetables - All vegetables are acceptable except the starchy variety (Potatoes, sweet potatoes, certain squash, peas, carrots, corn, plantains) and those high in oxalates, see link below.

Berries – All berries are acceptable except those high in oxalates, see link below.

Seed oils – avoid all (soy, corn, safflower, canola, peanut). **Use** all animal fats, ghee, coconut, butter, olive, avocado.

Fruit – limit all fruit (generally high in carbohydrates)

Grains – severely limit all grains (oatmeal, cereals, bread and all products made with grains)
Oxalate content in food, see link below.

Intermittent fasting – this medication will facilitate ease of transition to skipping breakfast which could overall decrease insulin resistance (gives body a break from releasing insulin due to spikes in glucose with meals) at the cellular level

https://www.stjoes.ca/patients-visitors/patient-education/patient-education-k-o/pd-9447-oxalate-in-food.pdf

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ALPHA LIPOIC ACID/N-ACETYLCYSTEINE/ COENZYME Q10/ARGININE

CLINICAL USE AND CLINICAL PEARLS

- General metabolic health – mitochondrial support, insulin sensitization, glucose utilization, liver detoxification, inflammation and energy

DOSAGE FORM AND ADMINISTRATION

- Oral capsules - may take 1-2 twice daily
- Sulfur like odor due to N-acetylcysteine component
- GI disturbance and vertigo

MECHANISM OF ACTION

- Alpha lipoic acid – essential cofactor for mitochondrial bioenergetic enzymes; functions as an antioxidant and anti-inflammatory agent; may improve symptoms and processes involved in neuropathies; thought to improve insulin sensitivity and overall glycemic control by improves pancreatic beta islet cell functioning and overall glucose utilization and mitochondrial biogenesis
- N-acetyl cysteine – antioxidant and liver detoxification; replenishes glutathione which is utilized in antioxidant processes
- Coenzyme Q10 – key component of cellular mitochondrial energy production; found to be low in those with high adrenal stress; additionally, many prescription medications may deplete the body of CoQ10 (i.e. statins, beta blockers, bisphosphonates, oral contraceptives)
- Arginine – important role in metabolizing nitrogen and ammonia to generate nitric oxide; may improve mitochondrial functioning

TIME FRAME

- Improvement in overall health and energy with continued use has been reported

CONTRAINDICATIONS

- None at this time

WARNINGS/PRECAUTIONS

- None at this time

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BPC 157 AKA PENTADECAPEPTIDE

CLINICAL USE

- Leaky gut and inflammation
- Reduces pain and inflammation associated with injury
- Accelerates wound healing

DOSAGE FORM AND ADMINISTRATION

- Orally disintegrating tablet – dissolve under tongue or between cheek and gum daily
- Topical cream - applied up to 4 times per day initially, then may reduce dose and frequency of application as needed

MECHANISM OF ACTION

- Stable pentadecapeptide derived from gastric juices
- Potent angio-modulatory effects – modulates angiogenesis by increasing and decreasing when necessary; stimulates nitric oxide production and angiogenic cytokines
- Upregulates anti-inflammatory gene transcription factor while downregulating TNF-alpha
- Helps heal tissues, wounds, tendons, ligament, muscle, skin, gastric mucosa – promotes microscopic regeneration; improves tissue granulation, fibroblast recruitment and collagen formation
- Found to be cardioprotective, neuroprotective and gastroprotective – consult for additional information

TIME FRAME

- Improvement within 2-4 weeks of treatment has been reported

CONTRAINDICATIONS

- None at this time

WARNINGS/PRECAUTIONS

- Safe in recommended dosages
- Use with caution in cancer and other conditions when angiogenesis may need to be suppressed

MONITORING

- Improvement in symptoms related to use (i.e. GI symptoms, inflammation, injury, etc)

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INOSITOL/BUPROPION/NALTREXONE/CHROMIUM

CLINICAL USE

- Weight loss – reduction in cravings and feelings of hunger

DOSAGE FORM AND ADMINISTRATION

- Inositol 250mg/bupropion 75mg/naltrexone 8mg/chromium 0.1mg per altered release capsule
- Titrated to target dose over 4 weeks; recommend titrating down when discontinuing to avoid discontinuation syndrome
- Do not administer with high fat meals

ADMINISTRATION

- Dose titration:
    - Week 1: 1 capsule daily in the AM
    - Week 2: 1 capsule in the AM and 1 capsule at 1500
    - Week 3: 2 capsules in the AM and 1 capsule at 1500
    - Week 4: 2 capsules in the AM and 2 capsules at 1500
- Do not administer with high fat meals
- Consult RXSolutions for help with tapering down when discontinuing therapy

MECHANISM OF ACTION

- Targets the mesolimbic reward system and the hypothalamus (regulates hunger)
    - Mesolimbic reward system regulates the feeling of pleasure when eating (cravings)
    - Neurons in the hypothalamus release neurotransmitters that either induce hunger or decrease hunger
- Bupropion stimulates POMC neurons which when activated reduce hunger
- Naltrexone shuts off the negative feedback loop resulting in POMC neurotransmitters remaining active longer to reduce hunger
- Inositol and chromium added to optimize insulin use at cellular level; supplementation with chromium may aid to help with appetite suppression via reducing carbohydrate cravings and diurnal eating

TIME FRAME

- May feel effects in first 2-4 weeks
- Optimal effects vary based on individual weight loss goals

CONTRAINDICATIONS

- Bupropion black box warning – may cause suicidality (antidepressant drugs)
- Bupropion: uncontrolled hypertension, seizure disorder or history of seizures; current or past diagnosis of bulimia or anorexia nervosa

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WARNINGS/PRECAUTIONS

- Reasonable to avoid use while taking opioids
- Bupropion
    - Suicidal thinking/behavior in first 2-6 weeks of treatment
    - Cardiovascular effects – may increase heart rate and/or blood pressure
    - Neuropsychiatric effect – may induce changes in mood, psychosis and possibly mania (caution in patient with bipolar disorder)
    - Ocular effects – mild pupillary dilation, caution with glaucoma

ADVERSE REACTIONS

- Gastrointestinal
- Cardiovascular

MONITORING

- Consider discontinuation if weight loss < 4-5% of baseline after 3 months
- Monitor blood glucose levels and for changes in blood pressure and mood
- Weight: initial, 1 month then every 3 months
- Our recommendation would be to follow up every 3 months

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LITHIUM/PROPRANOLOL/TAURINE/THEANINE/ MAGNESIUM GLYCINATE

CLINICAL USE AND CLINICAL PEARLS

- May improve brain-derived neurotrophic factors (BDNF) via participation in neuronal plasticity (learning and memory)
- Improve relaxation and sleep; non-drowsy

DOSAGE FORM AND ADMINISTRATION

- Lithium 6 mg/Propranolol 2 mg/Taurine 75 mg/Theanine 200 mg/ Magnesium glycinate 200 mg per capsule

PROPOSED MECHANISM OF ACTION

- Low dose lithium (3-20mg per day) – may be beneficial in acute anxiety episodes when used at low doses; may also improve sleep quality and cognition as well as decrease inflammation in the brain and body
- Propranolol – lipophilic, nonselective beta-1 (cardiac) and beta-2 (periphery) blocker; crosses blood brain barrier; commonly used for situational anxiety (stage fright) and panic attacks
- Taurine and theanine – may improve BDNF (see below); inhibits glutamate receptors (excitatory); increase glycine mediate norepinephrine release; quiets mind chatter; induces GABA (calming effect); thought to improve alpha waves in the brain, decrease anxiety and improve relaxation; helpful in those experiencing daytime drowsiness
    - BDNF expressed extensively throughout the body (specifically in CNS and gut); involved in neuronal survival and growth; participates in neuronal plasticity which is essential for learning and memory
- Magnesium glycinate – magnesium is a cofactor used by many processes in the body to regulate metabolic processes including energy production, protein synthesis, muscle and nerve function; magnesium glycinate is being used more commonly to aid in relaxation

TIME FRAME

- Anxiety relief and feelings of calmness within 1-2 hours of administration has been reported

CONTRAINDICATIONS

- None at this time

WARNINGS/PRECAUTIONS

- Caution in patients with renal impairment (electrolyte imbalance)

MONITORING

- Electrolytes, HR and blood pressure if using frequently

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LOW DOSE NALTREXONE/MAGNESIUM GLYCINATE

CLINICAL USE

- Immune modulator
- Assist in preventing activation of the inflammatory cascade and immune response
- Weight loss, autoimmune disorders (Hashimoto's)

DOSAGE FORM AND ADMINISTRATION

- Naltrexone 1.5mg dose titration to 4.5mg daily
    - Take 1 capsule nightly at bedtime x1 week
    - Take 2 capsules nightly at bedtime x1 week
    - Take 3 capsules or 4.5mg nightly at bedtime thereafter
- May start lower if using to treat autoimmune diseases
- May cause vivid dreams when initiating and when increasing dose, however seem to dissipate with continued use

MECHANISM OF ACTION

- Commonly used in autoimmune disorders to prevent the activation of the immune response
- Inflammation and immune modulator
- Endorphin and cravings – mimic natural neuropeptides (aka endorphins)

EXPECTED TIME TO BENEFIT

- May feel effects as early as 1-2 weeks
- May take 2-3 months to receive full benefit

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SAFFRON/TYROSINE/AMINO ACID (TAURINE/ THEANINE) + COFACTOR (B6/B8/B12) BLEND

CLINICAL USE

- May improve focus and concentration allowing cognitive flexibility and smooth task switching

DOSAGE FORM AND ADMINISTRATION

- Saffron 30 mg/ Tyrosine 250mg/ Taurine 50mg/Theanine 200mg/ Pyridoxine 7.5mg/ Methylcobalamin 50 mcg/ Inositol 200mg per capsule

PROPOSED MECHANISM OF ACTION

- Saffron - historically used as a culinary spice; antioxidant, aiding in cellular respiration and neutralization of reactive oxygen and nitrogen species throughout cells in the body
    - Promotes the production of serotonin in the gut
    - Suspected to block norepinephrine/serotonergic/dopamine reuptake in synapses of prefrontal cortex (area associated with concentration, memory, learning, executive function/impulse control etc), thereby, increasing time of neurotransmitters in synapse to improve focus and concentration
    - Increasing evidence to support the the use of saffron in settings of depression, anxiety and ADHD
- Inositol (B8) - mediates cell signal transduction in response to a variety of hormones, neurotransmitters and growth factors; associated with positive mood and emotional regulation
- Tyrosine + Methylcobalamin (B12) + Pyridoxine (B6)
    - Precursor with cofactors to synthesize dopamine and other neurotransmitters
- Taurine and theanine – may improve brain derived neurotrophic factor (see below); inhibits glutamate receptors (excitatory); increase glycine mediate norepinephrine release; quiets mind chatter; induces GABA (calming effect); thought to improve alpha waves in the brain, decrease anxiety and improve relaxation; helpful in those experiencing daytime drowsiness
    - BDNF expressed extensively throughout the body (specifically in CNS and gut); involved in neuronal survival and growth; participates in neuronal plasticity which is essential for learning and memory
    - BDNF thought to promote learning and memory by cell survival, differentiation, and death of specific neuronal populations

SAFFRON SOURCE

- Saffron extract is sold through many sources, however, the extraction process is not commonly detailed in product description of individual manufacturers; commercially available extract may contain fillers disguised as saffron (i.e. turmeric, paprika, etc)
- We use 100% pure saffron threads which are micronized and then mixed in with the ingredients above

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SEMAGLUTIDE/METHYLCOBALAMIN

CLINICAL USE AND CONSIDERATIONS

- Weight loss agent – delays gastric emptying leading to increased feeling of fullness; glucose dependent insulin as well as glucagon secretion
- Consider **fish oil 1000mg twice daily and/or lemon oil** to prevent gallbladder related adverse effects mentioned below
- Consider combination with **sermorelin** to maintain lean muscle mass

DOSAGE FORM AND ADMINISTRATION

- Connect the two syringes using the provided syringe connector (white piece) and use the provided oral syringe to measure out dose
- Place dose under tongue, allow to remain for at least 2 minutes or as long as possible (10 minutes), then swish remainder around mouth for as long as possible then swallow
    - Goal is to increase the contact time between the medication and the tissue beneath the tongue
- Avoid eating or drinking for 30 minutes or longer to allow for optimal contact time in the oral mucosa
- If instructed, may adjust dose by 0.125ml (0.5mg) every 2 to 4 weeks based on efficacy and absence of side effects (speak to physician or RxSolutions pharmacist for guidance)
- May take 4-12 weeks to find optimal maintenance dose

MECHANISM OF ACTION

- Mimics endogenous GLP-1; stabilized against degradation by the DPP-4 enzyme and is bound to albumin extensively resulting in a long half life, decreased renal clearance and protection against metabolic degradation
- Glucose dependent insulin and glucagon secretion – when glucose is high in the bloodstream, semaglutide stimulates insulin secretion while lowering glucagon secretion
- Delays gastric emptying and reduces the rate at which glucose appears in circulation postprandially; increased feeling of fullness (satiety)

CONTRAINDICATIONS

- Pregnancy or breastfeeding; hypersensitivity to semaglutide
- Patients with a personal or family history of medullary thyroid carcinoma (MCT) or in patients with multiple endocrine neoplasia syndrome type 2

WARNINGS AND PRECAUTIONS

- Caution in patients with known gallbladder disease and biliary tract disease (cholelithiasis and cholecystitis)
    - Risk factors include therapy longer than 26 weeks, substantial weight loss and higher doses
    - Consider **fish oil and/or lemon oil** to prevent crystallization of bile in the gallbladder
- Recent finding that 40% of weight lost on semaglutide comes from muscle rather than fat leading to frailty without exercise
    - Consider **sermorelin** to prevent breakdown of muscle mass and promote lipolysis
- Caution in patients with active pancreatitis or a history of pancreatitis

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SERMORELIN

CLINICAL USE

- Weight loss support – sets in motion a cascade of metabolic benefits that affect the fundamental components of maintaining a healthy weight (see mechanism of action below); contributes to development of lean muscle mass

DOSAGE FORM AND ADMINISTRATION

- Place under tongue, allow to remain for 90 seconds, then swish remainder around mouth for 1-2 minutes then swallow
- Avoid eating or drinking for 30 minutes or longer to allow for optimal contact time in the oral mucosa

MECHANISM OF ACTION

- Mimics growth hormone releasing hormone (GHRH) by binding to receptors in the pituitary → secretion of growth hormone (GH)
    - Mimics effects of endogenous growth hormone releasing hormone (GHRH): binds to GHRH receptors in the pituitary leading to secretion of growth hormone (GH)
- Specific to weight loss, plays a pivotal role in promoting the breakdown of stored fat, allowing the body to utilize these fat stores as energy (also known as lipolysis); sheds excess weight

TIME FRAME

- May begin to see benefit 3 to 9 months

CONTRAINDICATIONS

- None at this time

WARNINGS/PRECAUTIONS

- None at this time

MONITORING AND NOTES

- The benefit from sermorelin is limited to the body's ability to create growth hormone as it works to stimulate the release of growth hormone, therefore, the risk of overdosing is mitigated
- Reasonable to use for purpose of countering the decrease in lean muscle mass associated with semaglutide

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TESTOSTERONE HRT CREAM

CLINICAL ADVANTAGES OF COMPOUNDED HRT CREAM

- Ease of application for patients
    - Commercially available testosterone gel 1% and 1.62%
        - Androgel 1%: 10mg per gram
        - Androgel 1.62%: 16.2mg per gram
    - Compounded testosterone cream allows higher doses (i.e. 25-200mg) to be delivered in less volume
        - Less volume = less time applying = improved adherence
- Allows for consistent testosterone levels over time
    - Eliminates weekly or twice weekly injections
    - Eliminates side effects from high doses of testosterone flooding the system at one given time
    - Eliminates symptoms of low testosterone toward the end of the week
    - Allows for constant levels

INDICATION/THERAPEUTIC TARGETS/MONITORING

- Low testosterone in men defined as two separate measurements of total serum testosterone levels <300 ng/dL drawn in AM after overnight fast
- Routine monitoring of testosterone - recommend 3 months after initiating therapy then every 6 to 12 months thereafter
- Considerations for hormone testing
    - Serum testing has not been validated for administration of topical hormones, however is commonly used to guide clinical decision making when adjusting therapy
        - If buccal or sublingual administration - test 3 to 4 hours after last dose
    - Saliva testing - shown to correlate well with tissue levels of hormone
        - May be used to monitor topical therapy
        - Do not use to saliva testing to monitor sublingual or buccal therapy

PATIENT APPLICATION

- Apply to clean, dry, non-exposed, non hairy area on skin (upper back or rib cage)
- Dose delivered over 2-3 hours after application

WRITING PRESCRIPTIONS

- Good starting dose 25 mg to 50 mg
- Titrate by 25 mg or 50 mg increments
- Common range 50 mg to 150 mg daily
- Example, testosterone 100mg/gm (10%) HRT topical cream
    - Apply _____ mg to clean, dry, intact skin once daily in the morning.
    - 90 day supply

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