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C-MED-100®. A novel, natural compound that averts inflammation and protects natural immunity through DNA repair

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ABSTRACT Recent research focusing on ways to enhance genetic repair systems has revealed previously unknown bioactive components present in *Uncaria tomentosa* that preserve DNA repair capabilities. Available commercially as C-MED-100®, this water-soluble extract containing activated carboxy alkyl esters is the only natural substance with current demonstrated ability to enhance DNA repair. As such, C-MED-100® offers an intriguing and promising method of maintaining health and restoring metabolic synergy and functional vitality in diverse clinical applications.

KEYWORDS *Uncaria tomentosa*, DNA repair, immune response, carboxy alkyl esters, inflammation

Most people are vaguely aware that DNA has something to do with our unique genetic identity and that DNA analysis of blood or tissue samples can be used to help solve crimes. The importance of DNA to health does not immediately come to mind. However, within the scientific community, research on the relationship of DNA to health and aging is a primary focus. Pharmaceutical companies are working to identify compounds that can be used to treat conditions such as acute and chronic inflammatory diseases, stroke, and Alzheimer's disease by modulating gene expression and enhancing DNA repair. Several international research consortiums are directing their efforts at identifying natural compounds that affect the inflammatory cascade controlled by nuclear transcription factor kappa B (NF- κ B), as it is a key regulator of numerous genes important in apoptosis, inflammation, and cellular growth. By influencing basic molecular mechanisms within the cell nucleus, the integrity of DNA can be preserved, and benefits to health may result. Investigators at the University of Lund, Sweden are the first and only group to date to demonstrate enhancement of DNA repair from a plant compound. Derived from *Uncaria tomentosa*, benefits of this unique water-soluble fraction on DNA repair and immune responses has been shown in both animal and human studies.

Carboxy alkyl esters, new class of bioactive compounds

The discovery and identification of specific active compounds in *Uncaria tomentosa* that influence DNA repair, and the method for their extraction, is the result of years of research by Dr. Ron Pero, a world-recognized expert in DNA research and professor of Cell and Molecular Biology at the University of Lund, Sweden.

Uncaria tomentosa, commonly known as cat's claw or uña de gato, has a long history of use in South American folk medicine for inflammation, infection, and other immune-related disorders.

Although various preparations of the herb have gained popularity in recent years within the nutraceutical industry, digestive complaints and other side effects often limit their use. No such side effects are associated with traditional preparation of the herb as a tea. In addition, although activity of *Uncaria tomentosa* was commonly believed to be associated with the oxindole alkaloids, tannins, and triterpenes present in the plant, Dr. Pero identified a class of bioactive compounds in the water-soluble tea extract that exert significant anti-inflammatory and immune stimulating properties free from side effects.

These water-soluble substances, largely present in the outer bark, consist of low-molecular weight compounds called carboxy alkyl esters, or CAEs. Their small molecular size and solubility allows for very efficient absorption across intestinal membranes. By carefully controlling and refining the traditional preparation process, Dr. Pero developed a patented extraction and ultrafiltration method that produces material virtually devoid of the higher molecular weight components such as conjugates of alkaloids and tannins (less than 0.05% by weight). This method also ensures a minimum concentration of 8% active CAE's. Although much smaller amounts of CAE's may be present in other *Uncaria* preparations, the hot water extraction process developed by Dr. Pero converts the CAEs into an active form recently identified as a benzoic acid analog. Available commercially as C-MED-100®, this novel extract contains a new class of active ingredients and is the only natural product with demonstrated efficacy for DNA repair.

Enhancement of DNA repair and immune cell responses

The actions of C-MED-100® on immune function and DNA repair have been evaluated in various animal and human trials. Oral doses between 200 mg and 700 mg per day in humans, and proportional doses in animals, have proved effective.

Animal studies first looked at the effects of C-MED-100® on white blood cell counts, a key indicator of immune competence. Rats were given the anti-cancer drug doxorubicin to experimentally induce lowering of white blood cells, and then supplemented with C-MED-100® for eight weeks. White blood cell counts of animals receiving C-MED-100® rebounded to normal levels in significantly fewer days than untreated animals. Another study supplemented healthy animals with C-MED-100® for eight weeks and then exposed their spleen immune cells to radiation therapy. Rebound capacity of cells was determined by adding radioactive thymidine, a DNA nucleotide base, to the cell culture and measuring its uptake in newly formed DNA. Enhanced recovery rate was again

observed in supplemented animals. Response was directly related to the amount of C-MED-100® ingested. Related studies show these effects are not selective on specific white blood cells, but that all types of beneficial immune T-cells are stimulated. C-MED-100® thus works with the body to correct white blood cell deficiencies without altering normal ratios or causing increased proliferation.

Similar benefits were demonstrated in human studies. After supplementation with 350 mg of C-MED-100® for nine weeks, white blood cell counts in healthy subjects increased, but remained within the normal range. Further validation of the immune-potentiating benefit was observed in individuals taking 350 mg of C-MED-100® twice daily for one month and then vaccinated with bacterial pneumonia antigen. White blood cell ratios increased significantly compared to unsupplemented individuals. No adverse effects on numerous other blood parameters or other side effects were seen.

Enhanced DNA repair is further documented in other studies. Both single and double strand breaks in DNA were repaired with greater efficiency in rats supplemented with C-MED-100® compared to controls. Supplementation trials in human volunteers receiving either 250 mg or 350 mg C-MED-100® showed significantly enhanced DNA repair in both supplemented groups. The greatest repair as well as the least amount of damage to cells exposed to an oxidizing agent occurred in those receiving 350 mg daily.

Synergistic action with antioxidants and other nutrients

The water-soluble compounds found in C-MED-100® appear to work, at least in part, by inhibiting the actions of NF- κ B which in turn shuts down inflammatory cytokine production. Inhibition of NF- κ B therefore has significant potential to reduce genetic damage and avoid over-stimulation of the inflammatory process. C-MED-100® also seems to be a new type of antioxidant. Rather than scavenging free radicals like conventional antioxidants, C-MED-100® prevents formation of free radicals that are otherwise produced when NF- κ B stimulates cytokine production.

Several studies on concurrent supplementation of various antioxidants and other micronutrients with C-MED-100® have shown an additive, protective benefit on DNA protection and repair processes. Similar enhancement of immune-potentiating actions has been observed for combinations of C-MED-100® with medicinal mushrooms as well as with Larch arabinogalactans.

Broad scope of clinical applications

The full potential of the immune-enhancing and DNA repair actions of C-MED-100® are just beginning to be realized. By influencing cellular processes at the fundamental level of gene expression, the implications for health optimization are far-reaching. The highly favorable safety profile of C-MED-100® allows it to be used in all types of patients without concern of toxicity or intolerance. There are no known drug interactions. Modest doses starting as low as 200 mg daily have shown benefit. Slightly higher amounts between 350 mg to 700 mg daily appear to be effective in most applications. Studies have shown it is safe in doses as high as 8,000 mg per day.

Clinical observations and recent small-scale human studies indicate that C-MED-100® is of value as an adjunct to other therapies in individuals with overactive inflammatory processes, increased susceptibility to infection, or when recovering from

illness or surgery. C-MED-100® is safe for those with autoimmune conditions, asthma, irritable bowel, and other disorders affecting immune function. Individuals with a family history of heart disease, diabetes, cancer, or other chronic conditions, as well as those wanting to optimize health, can also take it routinely as part of an overall health maintenance program.

Three U.S. patents protect the integrity of the C-MED-100® extract to ensure consistent purity and potency of active water-soluble CAE components and reliability for use in clinical practice as a DNA repair agent. The ability of this nontoxic extract to inhibit NF- κ B and favorably influence the inflammatory cascade could translate into a highly effective new way of maintaining optimal cellular health as we age.

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