declines do not seem remarkable, the authors note that, as implicated by epidemiological studies, even a slight decrease in BP reduces the rate of cardiovascular diseases. The INTERSALT study, for example,[49] reported a 2-3 mmHg decrease in systolic BP, which was correlated to a 4% lower risk of coronary death, and a 6% lower threat of stroke death in middle age.[48] In comparing sesame to coconut oil in patients with insulin resistance, diabetes, and dyslipidemia, Mitra A. reported a decline in both systolic and diastolic BP with the use of sesame as cooking oil (35 mL/day). The systolic BP declined from 136±12 mmHg to 122±9 mmHg following the first month of therapy, and to 116±7 mmHg following the second month of therapy ($p \leq 0.050$). The decrease in diastolic BP was from 84±8 mmHg to 76±6 mmHg in the first month of therapy, and to 72±6 mmHg following the second month ($p \leq 0.025$) of therapy. Fasting blood sugar was also significantly reduced with the use of the sesame, from an initial of 153±8 mg/dl to 144±7 mg/dl ($p \leq 0.005$).[50] A separate study, also using 35g of sesame per day, reported a significant decrease in both systolic and diastolic blood pressure, decreasing from 144.25 ± 10.50 to 124.88 ± 8.0 for systolic BP, and from 97.9 ± 7.80 to 83.80 ± 6.0 for diastolic BP. In addition to the decrease in BP, a significant reduction in both body weight and body mass index was also observed.[51] Withdrawal of sesame oil resulted in BP values returning to pretreatment levels, implicating sesame as a valid therapeutic agent in blood pressure reduction.

Even factoring in a high salt diet, when combined with sesamin, a significant repression in the development of hypertension was demonstrated.[52] The antihypertensive action of sesamin is thought to be three-fold; by virtue of its ability to increase nitric oxide, via its ability to induce endothelial nitric oxide synthase gene expression, in a dose-dependant manner, and through its effectiveness in inhibiting endothelin-1 production.[53] Its antioxidant activities are also thought to contribute to its antihypertensive effect,[48] as are its ability to improve damaged "endothelium-dependent vasodilatory responses and vasorelaxation."[48, 54, 55, 56, 57]

Blood Sugar Regulation

The consumption of sesame has been correlated with a significant reduction in level of blood glucose (322.61 +/- 9.49 mg/dL pretreatment to 222.02 +/- 8.27 mg/dL following supplementation), in conjunction with a reduced level of glycosylated hemoglobin (HbA1c).[58] Also illustrated was a significant reduction in the activity of the gluconeogenic enzymes glucose-6-phosphatase and fructose-1,6-bisphosphatase, a reduction in lipid peroxidation and oxidative stress, as evidenced by a significantly reduced TBARS assay, and a reduction in the level of lipid peroxidation (lipid hydroperodides).[58] These actions were correlated with an elevated levels of hemoglobin, vitamin E, GSH, and hexokinase activity,[58] implicating its beneficial attributes as an antioxidant. Hexokinases are spec-ulated to contribute to the protective effects of growth factors, specifically in the promotion of epithelial cell survival.[59] Mitra A. also noted a "significant decline in fasting blood sugar" which was dependant upon sesame intake.[60]

Bactericidal & Fungicidal Properties

Sesame oil's use for wound healing dates back thousands of years. Because of its ability to penetrate the skin quickly and enter the bloodstream through the capillaries, it can rapidly neutralize oxygen radicals in the tissues beneath the skin. It possesses natural antibacterial properties, and is commonly used for eradication of skin pathogens, including *Staphylococcus* and *Streptococcus* species, as well as for the eradication of common skin fungi, such as athlete's foot.[61] It has also been demonstrated to aide in the healing of mild scrapes, cuts, and abrasions.

Immunomodulating Effects

Although just beginning to be elucidated, an additional attribute of sesame is its benefit in modulating the immune system. Sesame administration (4mg/kg/day) in an animal model of multiple sclerosis (modeled as a Th1 cell-mediated autoimmune disease) was demonstrated to significantly delay the onset of experimentally induced autoimmune encephalo-myelitis, via its action in decreasing the production of IFN-gamma ($p = 0.001$), while simultaneously enhancing the production of IL-10.[62] IL-10 functions as an anti-inflammatory cytokine. It functions to enhance B-cell survival, proliferation, and antibody production, and blocks NF-kappa B activity.[63] Correspondingly, sesame is expected to be beneficial for autoimmune conditions, by virtue of its modulating effect on the production of Th1 immune response.

Although sesame is cultivated primarily for its edible seeds, it possesses biologically active lignans, which exhibit therapeutic properties. Its antioxidant properties are unique compared to other polyphenolic antioxidants, and it has been suggested that there exists

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