



# HerbClip™

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**File: ■ Black Chokeberry (*Aronia melanocarpa*)  
■ Cellulite  
■ Skin Morphology**

**HC 061412-508**

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**RE: Black Chokeberry Juice Consumption Improves Several Morphological Features of Cellulite in Premenopausal Women**

Šavikin K, Menković N, Zdunić G, et al. Dietary supplementation with polyphenol-rich chokeberry juice improves skin morphology in cellulite. *J Med Food*. 2014;17(5):582-587.

Cellulite is a condition that is characterized by irregular dimpled skin around the thigh, buttocks, and abdomen. This skin abnormality is due to weakened connective tissues, enlarged fat cells, and reduced microcirculation. Black chokeberry (*Aronia melanocarpa*) has been shown to reduce various risk factors associated with cardiovascular disease (e.g., improved vasodilation effects). Moreover, anthocyanins, a class of phenolic compounds that is abundant in black chokeberry, redistribute microvascular blood and have beneficial effects on blood vessel permeability. The aim of this study was to evaluate the effects of organic black chokeberry juice (OCJ; Tłocznia Rembowscy; Popówko, Poland) consumption on women with cellulite.

This study took place in Belgrade, Serbia. The total phenolics, anthocyanins, and free radical scavenging activities (antioxidant effects) of the OCJ were measured. In addition, there were a total of 29 premenopausal women (age 25-48) included in the study that, based on the Nürnberger-Müller scale, had cellulite grade 2 (orange peel-like appearance). For 90 days, subjects consumed 100 ml of OCJ 30 minutes before a main meal each day.

Several parameters were evaluated in the subjects, including subcutaneous tissue thickness (ScTT), thickness of subcutaneous tissue and dermis (DScTT), thickness of dermis and epidermis (DET), the length of subcutaneous tissue fascicles (ScTFL), the presence of edemas within the dermis, lipid parameters (e.g., cholesterol), glucose, liver/kidney function (e.g., aspartate and alanine transaminase, urea), iron, hematological parameters (e.g., hemoglobin), and anthropometric parameters (e.g., body weight). These measurements were conducted on day 0, 45, and 90 of the study, with the exception of the biochemical parameters (measured at the beginning and the end of the study). Moreover, the front and the back of the upper thigh were photographed at the beginning and the end of the study. Questionnaires were given to

the subjects at day 90 to evaluate their treatment effects.

The total phenolics and total anthocyanins in the OCJ were measured by visible spectrophotometry. The juice was found to contain 386 mg phenolics as gallic acid equivalents/100 g of juice and 25 mg anthocyanins/100 g of juice measured as cyanidin-3-O-glucoside, respectively. The half maximal inhibitory concentration (IC<sub>50</sub>) value of the free radical scavenging activity for OCJ was found to be 1.74 ± 0.04 mg/mL.

After 45 days of OCJ consumption, both ScTT and DScTT were reduced in all subjects. Further reduction was also found at the end of the study, with average reductions of 1.9 and 2.1 mm (9.5% and 9.6%) of ScTT and DScTT, respectively (P<0.05). DET was also reduced compared to baseline by day 45 and day 90 of the intervention in 65% and 90% of the subjects, respectively. The average reduction of DET by the end of the study was 0.3 mm, which was significantly lower than the baseline value (P<0.05). A similar result was also observed with ScTFL, which was significantly reduced by 1.35 mm by the end of the study (P<0.05). Edema was observed in 60% of the subjects at the beginning of the study, 20.7% at day 45, and by the end of the study, none of the subjects had edema. Based on photographs of the thigh, 5 independent evaluators saw improvements on visual appearance of cellulite at the end of the study.

There were no statistical differences found for biochemical and anthropometric measurements after the intervention. However, several anthropometric and biochemical parameters were improved in some of the subjects. A decrease in body weight, % fat, abdominal circumference, and thigh circumference were found in 55%, 69%, 62%, and 41% of the subjects at the end of the study, respectively. In addition, changes in several biochemical parameters after the intervention were observed in more than 50% of the subjects. Kidney and liver function indicated OCJ consumption was safe. The questionnaires indicated that 41.4% of the subjects reported visual improvement of cellulite, 48.3% did not report any change, and 10.3% were ambivalent. The positive overall effect on skin tightness was reported by 69% of the subjects and gastrointestinal adverse side effects were reported in 13.8% of the subjects.

After approximately 3 months of OCJ consumption, several cellulite attributes improved in the subjects. More specifically, the authors conclude that OCJ reduced edema and had beneficial effects on the length of subcutaneous tissue fascicles, subcutaneous tissue, and dermis thickness in healthy women with cellulite (grade 2). The authors suggest anthocyanins are the active component of these fruits and that improved microcirculation is one possible mechanism of action. These effects should be confirmed in larger studies and potentially be compared to other berries of similar anthocyanin content.

—*Laura M. Bystrom, PhD*

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