

## Bark Blend Research Paper

### APPEARS INS

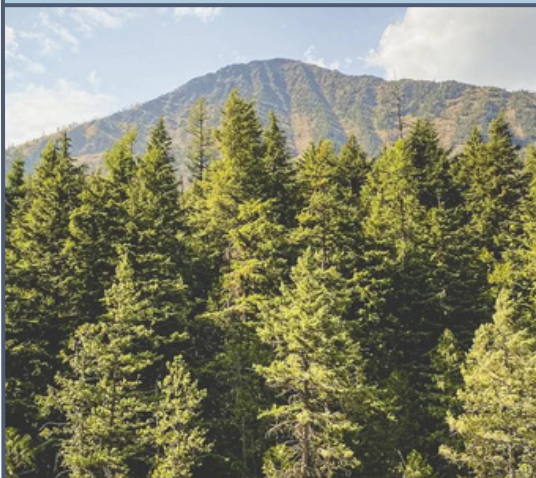


The Three Ships Bark Blend is a mixture of extracts from trees that are native to the Boreal forest in Quebec. These tree species are Red Maple, Black Spruce, Yellow Birch, and Jack Pine. The bark is sourced from the forestry industry, where it would have been considered waste, and has been treated to extract useful phenols that have skincare applications. The Bark Blend helps with hydration and strengthening skin health and is an active constituent in Three Ships products such as the Dew Drops Serum, and Radiance Day cream

### THE BARK BLEND COCKTAIL IS GREAT FOR SENSITIVE SKIN

As mentioned previously, the trees in the Bark Blend are sourced from the Boreal forests located in Quebec, Canada. Red Maple trees are a type of hardwood tree typically used to make flooring, furniture, and other forestry products. Black Spruce is a conifer tree, also known as a type of softwood tree. It is also typically used in floor, furniture, and construction.

The Yellow Birch tree is another common birch species in the Boreal forest. Finally, Jack Pine is a softwood tree that has similar applications as Black Spruce. The Bark Blend cocktail is great for sensitive skin and has been examined to have high phenol and terpenoid content that help to hydrate the skin.



Traditionally, Bark Extract is made from Red Maple, Black Spruce, Yellow Birch, and Jack Pine that is leftover from wood processing. The bark then goes through an extraction, filtration, and purification process to obtain the final extract.

The exact process of extraction method for the Bark Extract that Three Ships sources is proprietary information.

## PROTECT THE SKIN FROM OXIDATIVE STRESS AND HYDRATE THE SKIN

Each Bark Extract contains different active molecules. The Red Maple Extract's active molecules are glycosylated phenol, flavonoids, and catechins. The active molecules in Black Spruce are stilbenes, flavonoids, proanthocyanidins, lignans, and hydroxycinnamic acids.

The active molecules in Yellow Birch are lupenone, lupeol, betulinol, and betulin, and Jack Pine contains polyphenols. Overall, the different extracts work together to protect the skin from oxidative stress and hydrate the skin.

### SCIENTIFIC STUDY

#### Ex-Vivo and In-Vivo Testing Using the Bark Extract Blend

In ex-vivo testing, the Bark Blend was found to increase the aquaporin-3 gene expression, which ensures water circulation through cell membranes. Increasing the expression of this gene results in an increase in the skin's hydration capacity and helps with the maintenance of skin elasticity. In this study, the Bark Blend was incorporated into a serum tested on a skin-equivalent ex-vivo.

The resulting aquaporin-3 expression was found to increase with increasing dosages of the Bark Extract Blend. In-vivo testing on human participants also showed results of long-lasting hydration. The study used a cream containing the Bark Extract Blend, compared against a basic placebo cream, on a group of 25 women.

The Bark Extract Blend cream was found to significantly increase hydration with a 21% increase in cutaneous hydration rate after 2h (compared to 7% for placebo), a 24% increase after 4h (10% for placebo), and a 20% increase after 8h (20% for placebo).

The Bark Extract Blend is a great hydration ingredient sourced from Canada, the same country Three Ships was born in. The Bark Blend contains extracts upcycled from four different trees native to Quebec, Red Maple, Black Spruce, Yellow Birch, and Jack Pine trees. This unique Bark Extract Blend can be found in Three Ships' products, such as the Dew Drops Serum and Radiance Day Cream