

FORMULATING WITH ROSEMARY EXTRACT

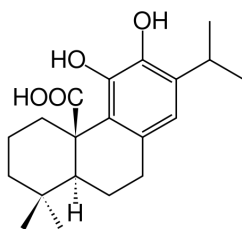


ROSEMARY EXTRACT

Rosemary extract has a lot going for it and you can find it as an essential oil, an oil, a liquid extract, and a powdered extract. Let's take a look at the liquid and powdered extract (the essential oil post will come one day!). The extract we're taking a look at today is water soluble - the oil and essential oils are oil soluble.

Rosemary extract is supposed to offer toning, astringency, increased blood circulation, as well as anti-oxidant, anti-inflammatory, analgesic, and anti-microbial features. It inhibits oxidative cell damage, and it can be added to our products to increase the shelf life. Finally, there is some suggestion rosemary extract might be anti-aging by offering a decrease in the appearance of fine lines and wrinkles.

There are six main components of rosemary oil that offer the awesome qualities we'll soon want in every product! They are carnosic acid, carnosol, ursolic acid, rosmarinic acid, rosmaridiphenol, rosmanol. Rosemary also contains chlorogenic acid, caffeic acid, and tannins.



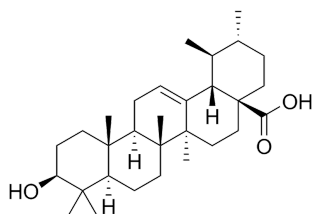
CARNOSIC ACID

Found in high levels in rosemary and sage, the carnosic acid is considered the main compound responsible for the high anti-oxidant levels of rosemary extract. It scavenges free radicals and hydrogen peroxide as well as hypochlorous acid (HOCl), a compound produced in our bodies at sites of inflammation. It also helps protect skin against UVA light, but I wouldn't use it as a sunscreen without testing!

When formulating with ingredients containing carnosic acid, we must add them in the cool down phase of our products as it is heat sensitive. It is also not great in aqueous solutions if said solution contains transitional metal ions. In other words, use distilled water. If you use tap water with some metal ions in it, it can send the carnosic acid into oxidation, which kinda defeats the purpose of using the ingredient in the first place. Or you can add some chelating ingredients (like EDTA or citric acid) to bind the metal ions. It converts to carnosol or rosmanol after free radical attack.

CARNOSOL

Carnosol is a diterpene found in rosemary that offers anti-oxidizing power more potent than BHT or BHA. It behaves as a free radical scavenger in our products. In rosemary extract, carnosol is slightly less effective than carnosic acid as an anti-oxidant, but not by much (if carnosol is 1, then carnosic acid rates a 1.2). It also has the ability to chelate iron in our products.



URSOLIC ACID

A pentacyclic triterpene acid, ursolic acid is also found in apples, basil, bilberries, cranberries, elder flower, peppermint, lavender, oregano, thyme, and prunes. It offers anti-inflammatory, anti-microbial, and anti-oxidant properties to our creations. It may have some effect on blood

circulation at the skin level, stimulating blood flow. It is called an anti-aging polyphenol because it may help restore skin's collagen bundles and elasticity. And it is showing promise as an anti-fungal ingredient. It is a more effective anti-oxidant than BHT.

Ursolic acid is alleged to be good for hair growth and prevention of scalp irritation, which is why you'll see rosemary included in many hair care products. The claim is that hair growth is encouraged by "stimulating peripheral blood flow in the scalp and activating hair mother cells". It is recommended for dandruff prone hair for the same reason. Again, more studies must be done, meaning this isn't a confirmed feature of ursolic acid.

Ursolic acid works in an interesting way - it actually forms an oil resistant barrier (I've seen it called a "waxy coating") on our skin, so we get a little occlusion from it, keeping the good stuff in and the damaging outside world outside! It is being tested as a burn and wound healer, due to the awesome nature of the anti-inflammatory action, and as a possible treatment for *Candida albicans* (yeast).

ROSMARIDIPHENOL

A very active anti-oxidant, it works about as well as or better than BHT or BHA in lard (there are conflicting results about which one it is better than, but suffice it to say it is a good anti-oxidant). It is oil soluble, so it is more effective in products containing some oils than products that are completely water based.

So can rosemary do what it promises? Pretty much the answer is yes! It can behave as a very good anti-oxidant, it can help reduce sebum production for particularly oily people, it can increase blood circulation in our skin, it can behave as an anti-microbial and anti-viral ingredient, it can offer mild analgesic properties, and it is an anti-inflammatory. Is it anti-aging? In the sense that it can help protect against UV damage, free radical damage, increase circulation - which could lead to improved skin tone - and it may help restore collagen and skin elasticity. Does it work as an insect (flea and tick) repellent? I wasn't able to find confirmed proof of this, but I guess it can't hurt to use it that way if it's also offering the wonderful qualities for your skin (although some of us need heavy duty, toxic to most mammals kind of spray to keep away the fleas and ticks - I am like sugar to them!).

WHICH ROSEMARY EXTRACT IS RIGHT FOR YOU?

Which kind of rosemary extract should you seek? The goodness of rosemary is offered to us in many different ways - deodorized, bleached, hexane, methane, or acetone extracted.

For the best levels of carnosic acid, choose hexane extracted. For the best levels of carnosol, acetone extracted is your choice. And for the best levels of ursolic acid, hexane extracted or bleached are your best choices.

Having said this, all the versions offer good levels of each ingredient (except methane extracted or bleached, either of which will offer trace amounts of carnosic acid), although if you're choosing rosemary solely as an anti-oxidant, the hexane and acetone extracted version are better than BHT and BHA at free radical scavenging, while the methane extracted and bleached are about the same

as BHT or BHA. In the end, the extracts you find at our suppliers' sites and stores will work well if you want great anti-oxidants and the other features of rosemary.

Rosemary works better as an anti-oxidant in ingredients with some fat in them - anhydrous bars or whipped butters, lotions, conditioners - but you can still include them in things like body washes and shampoos for low levels of anti-oxidants and all the other great features.

And there are some studies showing that a little Vitamin C added to anything containing rosemary extract can boost the anti-oxidizing capabilities of both, making it an incredible addition to a product! Vitamin C is a water soluble anti-oxidant; rosemary can be used in both water and oil based products, but is better in oil based products. This is a perfect combination for oil and water lotions, toners that contain a little bit of oil somewhere, conditioners, and anything containing at least a little oil and a little water. (Apparently the ideal ratio is 500 mg/kg Vitamin C to 200 mg/kg rosemary. So for a 100 gram batch of lotion you'd want 50 mg Vitamin E and 20 mg rosemary - 0.05% Vitamin C and 0.02% rosemary extract.)

As a note, rosemary can be an irritant to some people, so make sure you test it on your skin before using (if you're in doubt) and put a little note on your label if you're sharing your products with friends.

POWDERED ROSEMARY EXTRACT

A lot of rosemary's awesome polyphenols are sensitive to the heat, so you will want to include any rosemary extract in the cool down phase of your creation. With the powdered extract, use 0.5% to 1% in the cool down phase. Mix it with a little hot water and add it when it has completely dissolved. If you use this in a toner or facial cleanser, it might turn your creation a little green or brown, depending on the level of bleaching (if bleached).

LIQUID ROSEMARY EXTRACT

You can get a liquid extract of rosemary that isn't the essential oil or rosemary oil extract (rosemary oleoresin or ROE). It is soluble in water and should be used at the rate suggested by the supplier. Again, add it to the cool down phase of your creation.

ROSEMARY HYDROSOL

Rosemary hydrosol is not the same as liquid rosemary extract. It contains the goodness of rosemary, but you'll want to use it in higher quantities. At least 10% to replace the water phase of your creation will give you some of the goodness of the rosemary, but not so much of the anti-oxidant features. You can add this to the heated or cool down phase of your creation.

CO2 EXTRACTS OF ROSEMARY

You can get CO2 extracts of rosemary that are oil soluble, so you can add it to your anhydrous creations this way. Check your supplier's suggested usage rates as everyone is different. This is a great way to get rosemary into an anhydrous creation, and you can use it in emulsified creations as well. As usual, add to the cool down phase.

OIL BASED ROSEMARY EXTRACTS

ROE is generally used as an anti-oxidant and not for the other features of rosemary, but you can use it in place of the extract. It is oil soluble and should be used as suggested by the supplier. You can add this to anhydrous creations without worries about it not emulsifying!

ROSEMARY ESSENTIAL OIL

I'm not getting into this now - look for posts in the future. Just know you can get a rosemary essential oil, and you can use this at 0.5% to 1% in your creations for the great anti-oxidant and other benefits.

As usual, check the safety information on using rosemary essential oil in your products if you are using it on pregnant or nursing women. (Normally I forget to include this, but Mich has me trained well!!!) The essential oil is reported to have stimulating benefits, so you might want to re-consider using this ingredient in anything you might use at night!



USING ROSEMARY EXTRACT IN HAIR CARE PRODUCTS

Rosemary is a good addition to hair care products, what with the claims of increased blood circulation and the ability to form a thin oily barrier on your skin or scalp, and with the claims rosemary can control sebum production. So let's make a few hair care products that might be useful for someone with oily hair - that'd be me! - or a dandruff prone scalp.

SHAMPOO

There are a few ways to get the awesome power of rosemary in a shampoo. You could use rosemary hydrosol at 10%. You can use liquid rosemary extract at the rate suggested by the supplier. You can use powdered rosemary extract in the cool down phase. Or you can add rosemary essential oil as the fragrance oil in the cool down phase.

I am including each of these in the recipe below. You wouldn't necessarily include all of these rosemary based ingredients, so if you don't have the hydrosol, use water. If you have the powdered and liquid extract, choose one or the other. And you can include the essential oil blend with any of the other types of rosemary extracts.

SHAMPOO CONTAINING ROSEMARY EXTRACT THAT WOULD BE GOOD FOR OILY OR DANDRUFF PRONE HAIR

15% Bioterge 804
15% DLS Mild or LSB
35% water
10% rosemary hydrosol
10% Amphosol CG (for all hair types)
3% glycerin
2% hydrolyzed oat protein

COOL DOWN PHASE

0.5% powdered rosemary extract or 0.5% CO2 rosemary extract

2% panthenol
 2% dimethicone or condition-eze 7
 2% essential oils
 up to 2% Crothix
 0.5% Germall Plus or 1.0% Germaben II
 1% fragrance or essential oil - I use a blend of equal parts rosemary, sage, cedarwood and lemon or lime for my oily hair blend.
 Colour, if desired



CONDITIONER

We'd use our rosemary based ingredients in either the water phase - in the case of the hydrosol - or the cool down phase - in the case of the essential oil, powdered, or liquid extract - when including it in a conditioner. If you want to make a liquid or intense conditioner, just add it when appropriate at the right amounts (wow, that was helpful, eh?) Here's an example...

OILY HAIR CONDITIONER - defrizzing, conditioning, moisturizing without oils

WATER PHASE

69% water
 10% rosemary hydrosol

2% cromoist

OIL PHASE

7% BTMS
 2% cetyl alcohol

COOL DOWN PHASE

2% panthenol
 2% cetac
 2% cyclomethicone
 2% dimethicone
 0.5% powdered or CO2 extracted rosemary extract
 1% fragrance or essential oils -- oily hair blend - equal parts rosemary, clary sage, cedarwood, and lemon

If you want to make a solid conditioner, you'll want to use the oil based extracts or dissolve the powdered extract into the panthenol or cationic emulsifier before adding it to the mix. (We aren't using water in the solid bar, so we have to find another way to dissolve it!) If you want to make a leave in conditioner, add the hydrosol in the heated water phase, add the powdered or CO2 extract in the cool down phase, or add the essential oils in the cool down phase.

USING ROSEMARY EXTRACTS IN ANHYDROUS PRODUCTS

Rosemary extract offers anti-inflammatory and analgesic properties, which makes it perfect for anhydrous balms, unguents, and ointments. Because we will be looking at anhydrous products, we can't use rosemary hydrosol without some kind of emulsifier, and the powdered extract will be a little harder to include. For the most part, if you want to use rosemary extract in a non-water

based creation, you'll want to use the essential oil or CO2 extracts - anything requiring water won't blend in well, and will leave you with separation or some kind of weird thing that comes to the surface and makes the creation look really weird!

An unguent is a "soothing preparation spread on wounds, burns, rashes, abrasions or other topical injuries (i.e. damage to the skin). It is similar to an ointment, though typically an unguent is less viscous and more oily. It is usually delivered as a semi-solid paste spread on the skin and is often oily to suspend the medication or other active ingredients." Like a salve. I've just always wanted to use it in conversation...



LOTION BARS

A great way to make a fast and easy anhydrous bar including rosemary is to take the basic recipe for a lotion bar (click here...) of 33% wax, 33% butter, 33% oil, 1% Vitamin E, and include either the CO2 extract at 0.5% or the essential oil at 0.5% to 1%, removing 1% from the wax phase (I find this is the easiest way). Don't include it when your pot is simmering in the double boiler or melting away in the microwave - include it when you include your Vitamin E, when the mixture is cooling down.

WHIPPED BUTTER

Again, you can make a basic whipped butter of about 80% butter, 18% oil, 1% Vitamin E, and 1% fragrance or essential oil and add 0.5% CO2 extract or 0.5% to 1% essential oil as you whip it. Remove the 0.5% to 1% from the butter to make it 79% to 79.5% butter.

SOLID SCRUB BARS

A solid scrub bar would be the perfect product for the inclusion of rosemary! Just remove 0.5% to 1% from the butters and add it during the cool down phase (or cooler down phase, as is the case with most oil based things...we have to pour them before they get solid, so there really isn't a "cool down phase" as such...)



OIL SPRAY

An oil based spray is another other ideal delivery system for oil based rosemary extract! Just remove 0.5% to 1% from the oil of your choice, and you've got yourself a party!

FACIAL SERUM

You can use rosemary in a facial serum for the awesome anti-oxidizing and anti-inflammatory power. The astringent qualities would be great for someone with oily skin, and there are some suggestions rosemary might be an effective UV protectant (again, don't make this claim without testing!) It can increase skin's surface blood circulation and may help restore collagen and elasticity. It would be good for someone with dry skin, but you might want to start at 0.5% and work to 1% if you aren't a fan of the drier feeling.

Because a facial serum is oil based, you'll have to choose either the CO2 extract or essential oil I'm thinking the essential oil might not be the best choice for a facial application - it may be too strong a scent to have all day!

FACIAL SERUM FOR OILY, BREAK OUT PRONE SKIN

25% squalane
25% sesame oil
20% borage oil
9.5% calendula oil
20% pomegranate oil
0.5% rosemary CO2 extract

Mix together. Use a few drops on your face at a time.

FACIAL SERUM FOR DRY SKIN

20% squalane
20% soybean oil
20% camellia oil
10% evening primrose oil (20% for very dry skin, reduce the squalane by 10%)
10% borage oil
10% sea buckthorn oil
9.5% rosehip, carrot, or other oil that looks nice to you
0.5% rosemary CO2 extract

Yes, I know this looks a lot like the oily skin version, but there are differences. We are going with more ingredients to moisturize and with oils containing a lot of Vitamin E for softening and moisturizing. We're also using a lot of GLA to help with barrier repair, because that can be an issue for people with dry skin, and to decrease the transepidermal water loss.

Feel free to play with a serum you like - heck, post it here so you can share it with others! - because everyone's skin is different. There is no one magic oil that works for everyone awesomely (is that a word?) I love borage and rice bran oil - it might make you break out. But try these things for at least 7 days to see if they work (although if you are irritated, stop!)

USING ROSEMARY IN LOTIONS

Rosemary extract is a great addition to any lotion, added at 0.5% to 1% during the cool down phase. Remember, we add it to the cool down phase because some of the polyphenols are heat sensitive, and we don't want to have it use all its awesome anti-oxidizing power fighting off the heat before you've even bottled the lotion!

What does rosemary bring to a lotion? The anti-oxidizing powers alone are worth the inclusion, but the idea that it might increase circulation and increase collagen (which will increase skin's elasticity) interests me greatly! I also think the very light film rosemary can create through the ursolic acid is always useful in protecting our skin from the outside world and keeping the goodness next to our skin. Okay, it isn't as occlusive as something like cocoa butter or dimethicone, but a little extra protection isn't a bad thing to me!

SWIFT'S BASIC LOTION FORMULA**WATER PHASE**

70% water

OIL PHASE

15% oil

5% butter

3% cetyl alcohol or stearic acid

5% emulsifier of some kind

COOL DOWN PHASE

1% fragrance oil

0.5% to 1% preservatives

If you want to include rosemary extract in a recipe like this, always include it in the cool down phase at the suggested usage rate. If you want to include the essential oil, again that's included in the cool down phase. If you are using the hydrosol, substitute it for an equal amount of water.

To use the powdered extract, remove a little heated water from the water phase before you combine the two phases for emulsification. Let the extract completely dissolve, then add it to the lotion in the cool down phase.

BASIC LOTION MODIFIED WITH ROSEMARY**WATER PHASE**

59.5% water

10% rosemary hydrosol

OIL PHASE

15% oil

5% butter

3% cetyl alcohol or stearic acid

5% emulsifier of some kind

COOL DOWN PHASE

1% fragrance oil

0.5% powdered rosemary extract

0.5% to 1% preservatives

USING ROSEMARY IN OTHER PRODUCTS

Consider including rosemary extracts in various toners, face cleansers, and body sprays. I don't suggest using rosemary essential oil for stuff you might put on your face - it's a lovely scent at first, but do we want to smell it all day?

TONER

Rosemary is an awesome inclusion in a toner, especially one for oily skin. The ursolic acid creates a light oily barrier on your skin, so couple this with a hydrolyzed protein and you have yourself

some moisturizing that won't feel sticky or oily. For some people with oily skin, this recipe with the humectants and conditioning agents could be enough moisturizing for your face - you could skip the moisturizer! And the anti-inflammatory properties are always good for people who tend to redder cheeks! Throw in some green tea, aloe vera, and panthenol, and you've got a toner filled with great vitamins, minerals, and anti-oxidants! (And there might be a little UV protection, but not something we can advertise on the bottle!)

And we know all about the amazing power of green tea with all those lovely anti-oxidants, UV protectants, and anti-inflammatory properties, so let's throw that in to maximize our toner!

ROSEMARY AND GREEN TEA TONER

HEATED PHASE

24% water
30% witch hazel (the kind without alcohol)
25% rosemary hydrosol (or other hydrosol of choice)
10% aloe vera liquid
2% sodium lactate
2% hydrolyzed protein
3% honeyquat

COOL DOWN PHASE

3% honeyquat
2% panthenol
0.5% powdered rosemary extract
0.5% green tea extract
0.5% preservative (I use Germall Plus)

If you want to include liquid rosemary extract, add it to the cool down phase at 1 to 5% and remove the same amount from the water amount. Do not heat the liquid in the water phase!!!

Heat and hold the witch hazel, hydrosol, water, and aloe vera in a heat proof container in a double boiler for about 20 minutes. Remove from the heat.

Mix the powdered extract with some of the warm water before adding to the mixture.

When it cools down below 45C, add the cool down phase ingredients. When completely cooled, pour into a bottle and use as a toner. Or pour into a spray bottle and use as a spray toner!

USING ROSEMARY EXTRACT IN OTHER SPRAYS

It's fantastic in a summer spray - possible UV protection, anti-inflammatory, oily layer on your skin, anti-oxidizing power - so use it at the suggested amount in an alternative spray. For my husband's itchy leg spray, I could use rosemary to increase the anti-oxidizing power or the anti-inflammatory power.

SUPER EXTRA ALOE-Y APRES SUN SPRAY

WATER PHASE

86.5% aloe vera liquid

2% sodium lactate

COOL DOWN PHASE

3% honeyquat

5% panthenol

2% hydrolyzed protein

0.5% preservative (I use Liquid Germall Plus)

0.5% powdered rosemary extract

Heat and hold the water phase for 20 minutes at 70C. (You can heat and hold this in a container with a very small opening so you don't lose a lot to condensation!) Remove from your double boiler and allow to cool to 45C. Then add the cool down phase, including the essential oils, if you wish. Package in a spray bottle and use as you wish. (Keep it in the fridge if you want an extra cooling sensation).

As a note, you could include some lovely essential oils in here like lavender. Just remember oils need emulsifying, so you'll want to include equal parts essential oil to polysorbate 20 - don't go over 1% of each. And you can substitute some lavender hydrosol for the aloe vera if you want the lovely qualities of the lavender without adding oils.

WATER BASED WINTER ITCHY LEG SPRAY

HEATED PHASE

40.5% aloe vera (liquid, not gel)

40% lavender hydrosol (or chamomile hydrosol)

1% glycerin

2% sodium PCA

3% honeyquat

5% water soluble sunflower oil

3% cromoist

0.5% allantoin

COOL DOWN PHASE

3% panthenol

0.5% powdered green tea extract

0.5% powdered chamomile extract

0.5% powdered rosemary extract

0.5% liquid Germall Plus

Weigh the heated phase - except the allantoin - in a heat proof container and put into a double boiler. Sprinkle the allantoin in the water when it has heated to about 50°C and stir until dissolved. When the allantoin has fully dissolved, remove from heat.

When the temperature reaches 45°C, remove a bit of water from the heated phase and mix it with the powdered extracts, until they are dissolved. Add back to the water, then add the other ingredients. Mix very well.

When cooled, bottle in a spray bottle and give to your itchy loved one!

FACIAL CLEANSER

50% water

20% LSB or BSB surfactant (I like LSB for degreasing, use BSB if you have normal or dry skin)

10% Amphosol CG

10% aloe vera or other hydrosol

2% cromoist, hydrolyzed oat protein

2% panthenol

2% sodium lactate or glycerin

0.5% chamomile extract

0.5% rosemary extract

0.5% Germall Plus preservative or 1.0% Germaben II preservative

up to 2% Crothix

Blend the LSB and Amphosol CG together until well blended. Add the water and aloe vera or hydrosol into the mixture and mix until well blended. Now add the other ingredients, except for the Crothix. Put a little warm water into a small cup and mix the extracts together before adding. Allow to sit for about an hour and check the viscosity. You will want to add at least 1% Crothix to this mixture as it is a good anti-irritant. If you wish it to be thicker, you can add another 1% for a total of 2% Crothix to this mixture. Allow the bubbles to settle, then package. A pump bottle is great for this cleanser.

If you want to increase the amount of aloe vera or hydrosol, remove an equal amount of water from this recipe. You can add other extracts - cucumber, green tea, etc. - but please read the information on those extracts before deciding to combine them. Please do not leave out the preservative in this recipe as there are many botanical ingredients that need preserving. Finally, as there are many essential oils that are great for your facial skin, consider researching this topic and finding one you feel would be great for you. Keep the amount below 1% of the total weight of the recipe. You will want to add up to 1% (an equal amount) of polysorbate 20 emulsifier to the oil before adding, to keep the mixture emulsified.

Now considering we're planning to wash this off, is there any point in including the awesome goodness of rosemary? Yes, again with the ursolic acid, but it will form an oily layer that remains behind, offering moisturizing goodness.

By now, you're probably as much in love with the various rosemary extracts as I am! Happy formulating!

I hope you've enjoyed this little tutorial thingie on rosemary extract. Feel free to share these recipes with whomever you choose, but if you are posting it on a website, please give credit to Swift or Susan Barclay-Nichols and note my blog (<http://swiftcraftymonkey.blogspot.com>) or e-mail at sjbarclay@telus.net. That would be great!

If you really like this little tutorial thingie, please consider donating a few dollars to the Chilliwack Youth Library program fund (Our programs are collectively called Rated T for Teen). If you want to donate, you can reach me at sjbarclay@telus.net through hyperwallet (Canada) or through PayPal.

We provide different programs to youth at the Chilliwack and Yarrow Libraries (in Chilliwack, B.C., Canada) and most of the funding comes from the volunteers' pockets. We offer craft groups to teens, tweens, and pregnant and parenting teens. We provide two card and board game clubs, two video game clubs, and a Japanese pop culture program, as well. We also offer parent-child crafting programs. All of our programs are free of charge and we provide all supplies for all craft projects free so no one is left out. We average 15 to 20 youth per group from every part of the community – foster children, pregnant and parenting teens, students in alternate schools, home schooled youth, and everyone in between (although we've been averaging 32 kids at games night and had one craft group with 33!) We have had over 7,000 youth participate in our programs since 2005, and we would love to be able to continue the programs and expand to other communities. If you can donate a little to our groups, we'd be incredibly grateful!

Okay, the mooching ends here...but they are pretty awesome programs. We've done so many bath & body projects - hair care products, body wash, bubble bath, mineral make-up, and so on – which is a fantastic opportunity to share thoughts and discuss self-esteem, personal hygiene, applying make-up, and so on. We've made packages for women in transition houses and collected for the food bank. They really are amazing kids and so enthusiastic. If the idea of a young woman taking chemistry so she can learn more about bath and body products makes you smile...if the idea of youth enjoying the library and getting their own cards makes you happy...or if seeing a young person make her own purse and crochet scarves for Christmas presents, then please consider donating a little.

Okay, the mooching really ends now. I promise!

Happy formulating!

Susan Barclay-Nichols

<http://swiftcraftymonkey.blogspot.com>

sjbarclay@telus.net