Solubilities of Selected Herbs

The alcohol strengths listed represent the menstruum before adding the herbs.

Angelica root		
Angelica archangelica	fresh	60%
Astragalus root		
Astragalus membranaceus	fresh	50%
Burdock root		
Arctium lappa	fresh	40%
Boneset tops		
Eupatorium perfoliatum	fresh	55%
Black Cohosh root & rhizome		
Actaea racemosa	fresh	60%
Calendula flowers		
Calendula officinalis	fresh	70%
California Poppy tops		
Eschscolzica californica	fresh	50%
Catnip leaves		
Nepeta cataria	fresh/dry	60%
Cleavers tops		
Galium aparine	fresh/dry	40%
Dandelion root		
Taraxacum officinalis	fresh	50%
Echinacea root		
Echinacea purpurea	fresh	50%
Echinacea tops		
Echinacea purpurea	fresh	40%
Elder flowers		
Sambucus nigra	dry	30%
Elecampane root		
Inula helenium	fresh	60%
Feverfew tops		
Tanacetum parthenium	fresh	70%
Goldenrod tops		
Solidago canadensis	fresh	50%
Goldthread rootlets		
Coptis canadensis	fresh	70%
Hawthorn berries		
Crategus spp.	fresh	35-40%
Lemon Balm tops		
Melissa officinalis	fresh/dry	60%-70%

Meadowsweet leaf, flower, bark		
Filipendula ulmaria	fresh	40%
Motherwort young tops		
Leonurus cardiaca	fresh	50%
Mugwort tops		
Artemisia vulgaris	fresh	50%
Nettle tops		
Urtica diotica	fresh	50%
Peppermint leaves		
Mentha x piperita (hybrid cross)	dry	70%
Red Clover tops		
Trifolium praetense	fresh	40%
St. John's Wort tops		
Hypericum perforatum	fresh	60%
Sage leaves		
Salvia officinalis	fresh	70%
Scullcap tops		
Scutellaria lateriflora	fresh	50%
Thyme leaves and stems		
Thymus vulgaris	dry/fresh	70%-80%
Valerian root		
Valeriana officinalis	fresh	60%
Yarrow flowers and leaves		
Achillea millefolium	fresh	60%
Yellowdock root		
Rumes crispus	fresh	40%

Since fresh plants contain a certain amount of water, the final concentration of alcohol (once the tincture is strained) will be lower than what you began with. With many roots, you can assume that half of their fresh weight (50%, or .5) is water. In that case, the percent alcohol by volume of the final tincture is given by:

$$S \times 2V : (2V+1)$$

Where S is the *original* solubility of the menstruum (as listed above), and V is the volume-number in the weight-to-volume ratio (so, in a 1:3 tincture, V is 3. In a 1:4, V is 4, and so on). So, for example, if we were making a 1:3 tincture of fresh Echinacea, we would steep the roots in a 50% alcohol solution. When strained, the solution's actual percent of alcohol would be 50% times 6 (300) divided by 7, which is 42.85%.

If you want to arrive at a certain percentage of alcohol, work the above formula backwards. You end up with:

$$S \times (2V+1) : 2V$$

Where S is now the *final* solubility of the tincture and V is the volume number in the weight-to-volume ratio. So, if we wanted the final tincture to be 1:3 and have a 60% alcohol content, we would need to steep the fresh plant material (with its 50% water weight) in 60% x (7) : 6, which is exactly 70% alcohol. If we were preparing a 1:5 tincture, a bit weaker, we would have 60% x (11) : 10, which is about 67% alcohol as the solubility of the original menstruum.