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Short Communication

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Can a herbal remedy based on seeds and shells from rose-hip, subspecies lito, improve vision in people suffering from age-related macular degeneration (AMD)?

Abstract

Historically, vision has been essential to the survival of humankind. With increasing digitisation, however, vision may be even more important, as modern humans are dependent on their ability to read and interact with a multitude of technologies. These interactions entail tasks such as operating touch screens, reading instructions on a computer screen, reading small-scale text messages on our smart-phones or devices, reading the news, menus, or other items. To put it simple, our life is nowadays totally dependent on screen interactions and our ability to decipher and interpret these screens. Frequent daily screen interactions can lead to increased ocular challenges, including discomfort of the eyes, blurred vision, eye strain, eye pain and visual fatigue. Ageing of the general population in developed countries compound these challenges. For that reason, any treatment or change in lifestyle, which may improve or support vision, even to a limited degree, can be of great importance.

Age-Related, Macular Degeneration (AMD) annually affects millions of people worldwide, resulting in difficulties in recognising faces and focusing on screens. Two larger clinical studies have made it clear that a certain amount of people with AMD can improve their symptoms by taking a formulation containing high amounts of vitamin C, a lesser amount of vitamin E, lutein, zeaxanthin and select minerals. However, the same vitamins and minerals are naturally occurring in a humble plant: Rose-Hip, the fruits of *Rosa canina L*. Is it possible that a dried powder from Rose-Hip seeds and shells, which is already being used to alleviate pain and stiffness in people suffering from osteoarthritis, may also alleviate AMD symptoms? This topic is discussed in this short communication.

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Main body of communication

A handful volunteers taking Rose-Hip in the version *R. canina ssp. Lito*, containing seeds as well as shells, for alleviation of pain from osteoarthritis have spontaneously claimed that their AMD improved after taking Rose-Hip for a certain period of time. This led to a discussion of whether a remedy based on a plant material can be of benefit to people suffering AMD.

Figure 1 Rosa canina subspecies Lito, just before harvesting.

AMD is a condition which can result in blurred vision in the central visual field. Initially, AMD may be symptomless. Yet affected people often experience gradual decline in their vision on one or both eyes. It is not so common that AMD results in total blindness. However, loss of central vision can complicate daily activities, such as reading a newspaper, recognising faces, driving a car - especially in rainy weather or at night. And in a world of increasing screen time and digitisation, it is reasonable to focus on solutions that can improve vision.

AMD typically occurs in people of more than fifty years of age, where damage of the macula of the retina causes blurred vision. AMD prevalence varies between ethnic groups, with people of European descent being overrepresented. Particular smoking and also genetic factors play a role.[1] Diagnosis and severity is determined through a complete eye examination. Severity is classified as early, intermediate, or late-stage AMD, the late-stage being further divided into a dry form which cover up to 90% of the cases and a more seldom wet form covering about 10% of the cases.[1] AMD is a main cause of central blindness among elderly populations worldwide. In 2022 AMD affected more than 200 million people globally. The disease occurs equally in males and females and in 2013 it was the fourth most common cause of blindness after cataract, preterm birth and glaucoma.[1,2]

Exercise, a healthy diet and avoiding smoking can lower the risk of AMD. Possibly dietary supplements may slow the progression of AMD in people already having the dry version of the disease, but it is still not known if dietary supplements will affect the onset of AMD.[1–3] From 1992 to 2001 the Age-Related Eye Disease Study (AREDS), a placebo-controlled, randomised, clinical study, was run to investigate the natural history and risk factors of AMD and cataract.[4] AREDS also evaluated whether high doses of antioxidant and zinc would

have any impact on the progression of the two diseases.[4] Running 3640 volunteers for an average of more than 6 years it was concluded that high levels of antioxidants and zinc can reduce some peoples' risk of developing advanced AMD by 25%. There was no impact on development or progression of cataract.[4]

The AREDS defined a recommendation of 500 milligrams of vitamin C, 400 international units of vitamin E, 15 milligram of beta-carotene, a precursor of vitamin A (or 25.000 IU of vitamin A), 89 milligrams of zinc in the form zinc oxide and 2 mg of copper as cupric oxide (added to protect from copper deficiency anaemia, which can be the result of high level zinc intake). The AREDS 1 study was followed by AREDS 2 study in 2006 to test if the original AREDS formulation could be improved by adding fish oil (omega-3-fatty acids), and lutein and zeaxanthin (known to improve macular density),[5,6] as well as removing beta-carotene, or reducing zinc.[7]

The overall conclusion of the study was that there was no further improvement by adding fish oil up to 1000 mg daily, or lutein or zeaxanthin to the diet. In two subgroups however: those not given beta-carotene and those with very low levels of lutein and zeaxanthin in their diets received some benefits from treatment.[7] As beta-carotene had earlier been linked to improved risk of lung cancer in smokers and because beta-carotene to some extend could have masked the effects of lutein and zeaxanthin, in the present study, it was decided to take beta-carotene out of the formulation and add lutein and zeaxanthin to the second generation of the formulation.[7] Nowadays the AREDS2 formulation with all ingredients in one pill or capsule is available on the market in many countries. And in some countries beta-carotene is also still part of treatment and recommended to volunteers who have no personal or family history of lung cancer.[7]

How can the treatment generated from the AREDS studies be linked to a herbal remedy as the spoken Rose-Hip? The vitamins and minerals in the AREDS formulation is also present in Rose-Hip, Albeit, at a lower concentration in the daily dose of Rose-Hip, recommended for patients suffering osteoarthritis, which is 5 gram or even less.

Rose-Hip (*R. canina*) has the strongest antioxidant capacity of all berries, as it is about four times stronger than crowberry and blueberry, and seven times stronger than black currant.[8] Rose-Hip is also known for a very high content of vitamin C, (4 – 50 mg/g dried powder, depending on subspecies, ripeness and post-harvest production).[9–11] This is up to 20 times higher concentration than lemons, which is often recognized as the fruit with the highest amount of naturally occurring vitamin C.[9–11] Consequently, taking 5 gram of Rose-Hip powder will give you a daily dose of 20 -250 mg vitamin C (dependent on the quality of the product) which is less than what will be attained from the AREDS formulation, yielding 500 mg daily. However a recent study on the absorption of naturally occurring vitamin C, when taken as part of the whole entire dried Rose-Hip powder, demonstrated that the natural version was absorbed much easier than synthetic Vitamin C.[12] This effect may be caused by the complex formulation found naturally in Rose-Hip, where cofactors supporting the absorption of vitamin C may be present.[12] Additionally, increased absorption of vitamin C, when delivered as part of a natural remedy, powdered Rose-hip, possibly containing cofactors which ease the absorption, can be of interest as absorption in general is weakened with age.[13]

As for the level of vitamin E, 5 gram of Rose-hip powder will give you about 4 IU a day which is much less than what is available from the AREDS formulation[7] and a similar pattern is observed for lutein and zeaxanthin and the minerals zinc and cobber. However there have been spontaneous claims from elderly people taking 5 gram of Rose-Hip daily - the dose normally used in treating pain form osteoarthritis,[14,15] that rose-hip treatment improved their AMD. May this be ascribed to the fact that Rose-hip contain the same ingredients as the AREDS formulation, although to a lesser degree and possibly also the fact that Rose-Hip, like bilberry, further contains vitamin A, known to improve visual phototransduction and thereby vision.[16] And in addition, Rose-Hip, like bilberry, also contains huge amounts of anthocyanins[17–19] which are used as a supplement to improve vision health including night visual activity in several countries.[20]

Conclusion

The amount of the active ingredients mentioned as the outcome of the AREDS 1 and AREDS 2 studies are far higher when buying the recommended tablet or capsule in a drug store, than the daily dose of 5 gram Rose-Hip (*R. canina ssp. Lito*). However, it cannot be excluded that the biochemical background for the spontaneous reporting of improvements in AMD, reported by elderly people taking Rose-Hip (*R. canina ssp. Lito*) for their osteoarthritic pain, can be linked to the ingredients mentioned in the AREDS formulation. The effect may stem from the fact that the absorption of natural vitamins is superior to that observed for synthetic formulations. Moreover, the addition of vitamin A and anthocyanins found in Rose-Hip may further support the present spontaneous claims. However, before the discussion of the possible relevance of Rose-Hip in sufferers of AMD can be further discussed well-designed placebo-controlled, randomised, clinical studies are warranted.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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