The anti-inflammatory properties of rose-hip

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Abstract — The anti-inflammatory properties of rose-hip are described in this short report. Rose-hip extract reduced chemotaxis of peripheral blood neutrophils and monocytes of healthy subjects in vitro. Daily intake of rose-hip powder for four weeks by healthy volunteers and patients suffering from osteoarthritis, resulted in reduced serum C-reactive protein (CRP) levels and reduced chemotaxis of peripheral blood neutrophils. The results indicate that rose-hip possesses anti-inflammatory properties and might be used as a replacement or supplement for conventional drug therapies in patients with osteoarthritis.

Keywords: rose-hip; osteoarthritis; anti-inflammatory; chemotaxis; CRP

I. INTRODUCTION

There have been undocumented lay claims that rose-hip, normally known for its high vitamin C content, may reduce the pain in patients suffering from osteoarthritis. We have recently shown that rose-hip extract reduced the chemotaxis of peripheral blood polymorphonuclear leucocytes (PMNs) and monocytes in vitro [1]. This activity was independent of the vitamin C content of rose-hip. Furthermore, the level of CRP and the chemotaxis of neutrophils were reduced in healthy subjects under rose-hip treatment. The purpose of this study was to investigate whether the natural product rose-hip, administered as dry powder to volunteers of which four were suffering from clinical osteoarthritis, had any effect on the clinical signs and symptoms and certain inflammatory parameters.
2. SUBJECTS AND METHODS

2.1. Subjects

Eight male volunteers, free from any known allergic, hepatic, cardiovascular or infectious diseases, mean age 52 years (range 47-62), were entered into the study. Four of them had never experienced any pain of muscular or joint origin. The other four had all been engaged in hard physical work in different areas of construction for most of their adult life. One had suffered from clinical osteoarthritis for more than 20 years, with pain especially in the knee and elbow. The pain had been alleviated by injections of steroid directly into the joints and by acetylsalicylic acid and non-steroid anti-inflammatory drugs (NSAIDs). The second patient had osteoarthritis and moderate pain in the knee and the ankle, periodically relieved by acetylsalicylic acid. The third patient had pain from osteoarthritis of the ankle and had been periodically treated with NSAIDs and acetylsalicylic acid. The fourth patient had osteoarthritis of the elbow and shoulder of 10 years duration, normally treated with aspirin or paracetamol. The volunteers were treated with 45 grams (high dose) of Hyben Vital rose-hip daily for four weeks. The treatment was withdrawn at least once month, then followed by another treatment for four weeks at a daily dose of 10 grams (low dose). Rose-hip was taken together with a main meal. After four weeks of the high dose rose-hip intake, at the end of treatment-free intervals and at the end of the low dose intake, the volunteers were asked about the possible side-effects, and blood samples were collected for clinical chemistry and PMN chemotaxis studies. All blood samples were taken between 8:30 and 9:00 am by the same laboratory technician after 30 minutes of rest, and analyzed immediately.

2.2. Rose-hip

Rose-hip powder of Rosa canina was kindly provided by Hyben Vital, Langeland, Denmark. The rose-hip powder used in these studies was a well characterized and standardized batch containing both seeds and shell. During the drying procedure of the rose-hip powder, the temperature never exceeded 40°C. For the in vitro studies, a water extract of rose-hip was prepared. The extraction took place at 4°C.

<table>
<thead>
<tr>
<th>High dose</th>
<th>No therapy</th>
<th>Low dose</th>
</tr>
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<tbody>
<tr>
<td>(MLP)</td>
<td>44 ± 38.7μ</td>
<td>335 ± 24.0</td>
</tr>
<tr>
<td>(ZAS)</td>
<td>343 ± 89.7μ</td>
<td>637 ± 29.3</td>
</tr>
</tbody>
</table>

Significant difference of high dose with no therapy p ≤ 0.01.

Significant difference of low dose with no therapy p ≤ 0.02.

MLP: Mean ± SEM

- High dose and no therapy respectively. In the control group the
- High dose and low dose respectively. The neutrophil chemotaxis data are shown in Table 1.
- Chemotaxis data for fMLP declined by approximately 60% and 50%, in the high dose group, respectively, with p values of 0.01 and 0.02. Chemotaxis data for ZAS 414 ± 136 compared to 573 ± 27 in the high group and with no therapy. In the high dose control group the response to fMLP was 1.1 ± 45 as compared to 308 ± 22 and to ZAS compared to 600 ± 49 as compared to no therapy.

Rising of the present study is that rose-hip, given as dry powder, affects significantly and inhibited chemotaxis of peripheral blood mononuclear cells. To our knowledge, this finding has not been reported. There are very few reports in the literature on other properties of rose-hip that have been unreported as source of vitamin C in tea and other plants such as polymorphonuclear leukocytes (PMNs) and monocytes of the inflammatory process and tissue damage in inflammatory arthritis and atherosclerosis [4]. The damage is caused by the neutrophil and hydrolytic enzymes as well as toxic oxygen radicals [5]. This is why non-steroid anti-inflammatory drugs and glucocorticoids have been used for the treatment of these diseases [6, 7]. These drugs have a variety of side effects such as gastric erosion and kidney disturbances. The present study shows that administration of rose-hip to patients with osteoarthritis,
neutrophils and the levels of CRP rose to the untreated values. It is interesting
to note that the initial CRP values were higher in the patient than the control
group. The inhibition of chemotaxis observed in our study was comparable to
that observed with acetylsalicylic acid as reported by Matzner et al. [8]. On the
other hand Kemp and Smith [9] showed that incubation of neutrophils in vitro
with sodium salicylate increased the chemotaxis of these cells. A similar increased
response was observed in normal individuals after ingestion of sodium salicylate [9].
Some non-steroid anti-inflammatory drugs such as ibuprofen at in vivo obtainable
concentrations inhibited neutrophil locomotion by 50%, similar to our findings
with rose-hip [10–17]. The patients who complained of mild pain of osteoarthritis
origin, reported that their pain declined after 14 days of rose-hip intake. The pain
relieving effect of rose-hip in these patients was comparable to that of NSAID
and acetylsalicylic acid. In all cases the pain returned 12–14 days after stopping
intake. No allergic reactions or gastrointestinal disturbances were observed during
treatment. There was no major difference between the pain alleviating effect of
rose-hip given at the two different doses. Three patients had total pain relief
from rose-hip and were unable to distinguish the difference between the high dose
and the low dose. However, one patient felt that high dose gave him total relief
whereas low dose decreased the pain dramatically but not completely. In conclusion,
the anti-inflammatory and pain-relieving properties of the natural product rose-hip,
combined with its safety, low price and ease of administration, provide an
attractive strategy to use rose-hip as part of a supplement to a therapeutic regimen
for osteoarthritis. A large scale placebo-controlled clinical study will be required to
extend confirmation of the anti-inflammatory effect of rose-hip.

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