**Treatment of Leucopenia with Pure Astragalus Preparation**  
—— An Analysis of 115 Leucopenic Patients

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**ABSTRACT**  
This article reports the effects of pure Radix Astragali preparation (PAP) in treating 115 cases of leucopenia. These cases were divided at random into two groups. Group A (58 cases) was treated by highly concentrated PAP, every 10 ml equal to 15 grams of Radix Astragali (RA), group B (57 cases) was treated by lowly concentrated PAP, every 10 ml equal to 5 g of RA. The patients took the PAP twice a day, 10 ml each time. The course of treatment was 8 weeks for both groups. The results showed there was an obvious increase of the WBC counts in both groups after treatment ($P < 0.001$). The effectiveness in group A was 82.76%, while in group B 47.37%, they were statistically different ($P < 0.01$). The total effective rate of the 2 groups was 65.22%. According to the comparison average WBC counts after treatment of group A was significantly higher than that of group B ($P < 0.05$). The results were dose-dependent. The author holds that RA is an effective drug in treating leucopenia, and increasing the dosage could enhance its effectiveness.

**KEY WORDS**  
leucopenia, Radix Astragali, concentration of drug

Leucopenia is one of the frequently encountered diseases clinically. In some cases with the pathogenic factors unknown, the disease recurs over and over again for many years and is hardly to be cured by any treatment.

In order to investigate the therapeutic effect of Radix Astragali (RA) in treatment of leucopenia, 115 patients were treated with pure RA preparation (PAP) in oral liquid form and the effectiveness of PAP in various concentration was observed and compared.

**METHODS**

**Subjects**

One hundred and fifteen patients, 12 in-patients and 103 out-patients, with total white cell count (WBC) of peripheral blood lower than $4 \times 10^9/L$ were selected. They were divided randomly into 2 groups

Group A includes 58 cases, 5 males and 53 females, aged 25～52 years, $38.7 \pm 6.8$ years in average, 41 cases suffering from the disease for more than 3 years, 7 cases having the record of contacting toxic substance or drug, and the pathogenic factor of the other patients unknown. Group B includes 57 cases, 5 males and 52 females, aged 22～58 years, $37.0 \pm 6.3$ years in average, 40 cases suffering from the disease for more than 3 years, 8 cases having the record of contacting toxic substance or drug, the pathogenic factors of the other patients were unknown.

All of the patients manifested dizziness, fatigue, pale complexion, poor appetite, etc. in various degree. 12 of them had the symptom of palpitation, susceptible to common cold, etc. and most of them had their tongue pale and pulse thready and weak.

**Treatment**

PAP of different concentration was given to the two groups. For group A, PAP of high concentration (15 g in 10 ml) was used and for group B PAP of low concentration (5 g in 10 ml). The PAP used was supplied by Huanghai Pharmaceutical Factory in Shanghai, with the batch number of 910912 and 910824.

The dose of PAP was 10 ml twice a day, 8 weeks as one course. Other drugs were all withdrawn in the testing period.
Observation
The peripheral red cell count, hemoglobin, white cell and differentiation, and platelet were observed before and after the treatment. The total white cell count was examined every 2 weeks from the beginning of PAP treatment till 2 weeks after withdrawal of it. In addition, function of kidney and liver, serum IgG, IgA, IgM were also determined before and after the treatment in part of the patients (22 cases of group A and 15 of group B).

RESULTS
Standard for Judgement of Effectiveness
Assessment was based on standard of therapeutic effectiveness of leukogenic drug published in the (Principal Guidance of Clinical Research of Drugs), formulated by the Ministry of Health, but was partially altered by the author to facilitate the comparison. Based on whether the total WBC be increased to over $4 \times 10^9$/L or not and referring to the improvement of clinical symptoms, the effectiveness was divided into 3 classes:

1. Markedly effective: The WBC reaches over $4 \times 10^9$/L after treatment, and the effect is sustained till 2 weeks after withdrawal of PAP, with symptoms obviously alleviated or disappeared

2. Effective: The WBC after treatment arises by $0.5 \sim 1.0 \times 10^9$/L in comparison with the count before treatment, but still lower than $4 \times 10^9$/L, the effect is sustained till 2 weeks after withdrawal of PAP, and the symptoms alleviated.

3. Ineffective: After treatment, the WBC arises by less than $0.5 \times 10^9$/L, without alleviation in symptoms.

Comparison was done between the increase of WBC after treatment in the two groups and between the WBC before and after treatment. Student’s t-test and $\chi^2$ test were used for statistical analysis.

Comparison of Effectiveness between 2 Groups
Among the 58 cases in group A, 29 cases were markedly effective, 19 cases effective and 10 ineffective. In 6 of the effective cases, the WBC arose for over $1.0 \times 10^9$/L, in 13 cases, it arose for $0.5 \sim 1.0 \times 10^9$/L. The total effective rate was 82.76%. As for the 57 cases in group B, 17 cases were markedly effective, 10 cases effective, WBC in them all arisen for $0.5 \sim 1.0 \times 10^9$/L, 30 cases were ineffective, thus the total effective rate being 47.37%.

Therefore, with 75 cases out of 115 effective, the effective rate was 65.22%.

Analysis by $\chi^2$ test showed the difference of total effective rate between the two groups was significant ($P<0.01$).

Change of WBC After Treatment
As shown in Table 1, after treatment, the WBC increased significantly in both groups, and the effect of high concentration PAP was shown even more potent.

Among the 7 patients in group A with history of contacting toxic substance 3 cases were markedly effective, 2 effective and 2 ineffective, and for group B, the numbers were 5, 2 and 1 respectively. No significant difference was found between the two groups.

Other Index
The red blood cell, platelet count and hemoglobin content revealed no obvious change after treatment, the function of liver and kidney also remained within the normal range. Immunoglobulin of 37 patients was investigated before and after treatment, and results showed that there was an increase of IgM after treatment (as listed in Table 2), but no noticeable change in IgG and IgA.