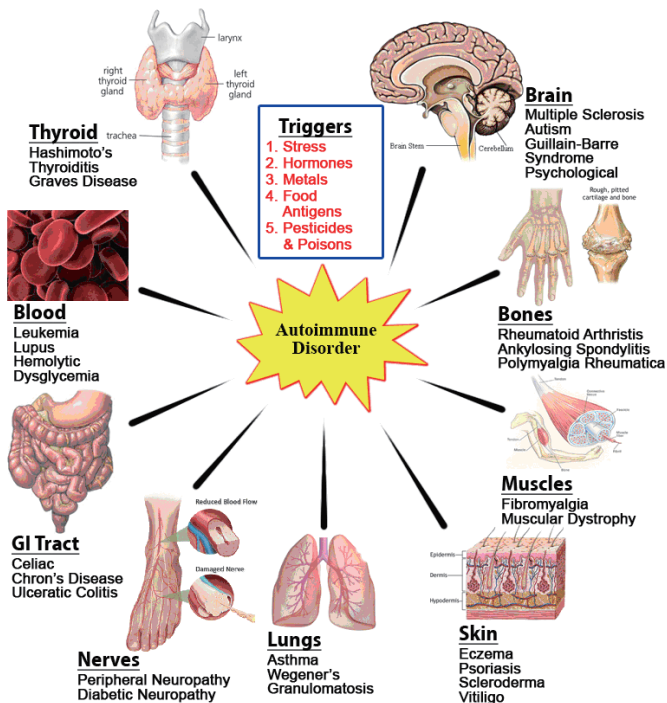


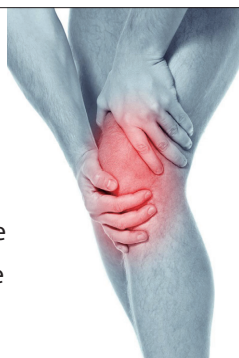
# Dammarane Saponin Rb1

## Potent Immunomodulator Wards off Bone and Joint Pain

Autoimmune diseases (e.g. systemic lupus Erythematosus, rheumatoid arthritis) are serious health problems, affecting thousands of patients annually.



More than half of population over 50 years old suffers from senile osteoarthropathy (joint pain, bone spur, joint deformation). Osteoarthropathy is related to bone loss and destruction of joint surface cartilage.

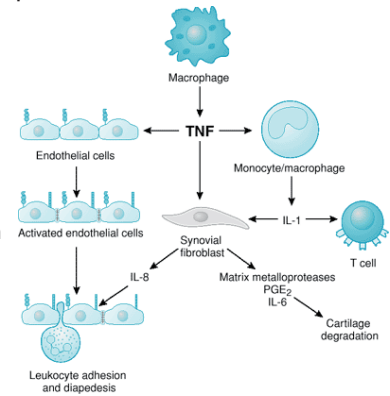


### References:

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Extracted from plants of Araliaceae family, dammarane saponin Rb1 possesses superior immunomodulating and bone anabolic properties.

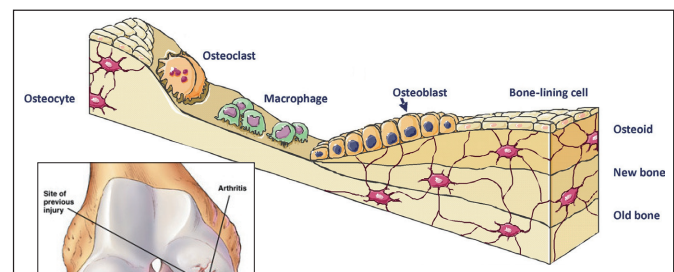
- Rb1 suppresses tumor necrosis factor (TNF- $\alpha$ ) secretion from macrophages so as to block vicious circle of inflammation augmentation[1, 2]



- Rb1 and its metabolite Compound K effectively ameliorate joint inflammation in rheumatoid arthritis[3, 4]

Seromarkers	Base Treatment	Base Treatment+Rb1
RF (IU/ml)	99.4 ± 127.3	44.1 ± 101.5
C3 (mg/dl)	117.2 ± 30.9	84.6 ± 28.4
IgM (mg/dl)	150.5 ± 78.2	121.6 ± 66.4
IgA (mg/dl)	274.6 ± 150.3	214.0 ± 133.8
CRP (mg/L)	37.5 ± 21.2	31.1 ± 22.7

- Rb1 improves lupus seromarkers (ESR, complement C3, urine albumin) and clinical symptoms[5, 6]
- Rb1 inhibits osteoclasts to prevent bone destruction, and stimulates osteoblasts for bone mineralization[7, 8]
- Rb1 blocks vitamin D inactivation[9]



- Rb1 inhibits chondrocyte apoptosis and protect joint[10, 11]

Unique Rb1 manufacture and dripping pill Formulation technologies ensure high oral absorption and low rate of side effects. At the same oral dosage, Rb1 dripping pill achieves 5-10 times the therapeutic effect as other ginsenoside products (powder, tablet or capsule).

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