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PHYSICIAN FACTSHEET: Rheumatoid Arthritis & Diet

How to prevent and treat RA with nutrition

Rheumatoid arthritis (RA) is an auto-immune condition that affects about 0.25% of the world population (1).

Dysregulated inflammatory processes in the joint synovium damage joint cartilage and bone tissue, particularly the hands and feet, and can cause significant pain and disability (2).

RA is 2 times more common in women than men. Smoking, poor dental health, poor sleep, unhealthy diets, obesity, or a family history of RA are risk factors (3). Exposure to viral pathogens has also been implicated in the progression of RA (2).

RA can increase systemic inflammation and affect other organs such as the skin, eyes, heart, nervous system, lungs, and blood (4). RA increases the risk of other non-communicable diseases and all-cause mortality (3).

"Rheumatoid Arthritis increases the risk of all-cause mortality, cardiovascular disease, infection, respiratory illness, osteoporosis, and cancer".

Chauhan et al, 2022

International guidelines focus on treatment with disease-modifying anti-rheumatic drugs (5), which are not without significant risks and side effects. Lifestyle modification including adopting a whole food plant-based diet reduces systemic inflammation (6) and improves RA Disease Activity Score (DAS) (12).

Pathomechanisms Influenced by Diet

Obesity

- Visceral adipose tissue increases cytokine production and chronic **systemic inflammation** (7)
- **Obese** individuals have a **three times greater risk** of developing RA (8)
- Reduces effectiveness of anti-TNFα drug therapy (9)
- **Increases risk of CVD** comorbidity (3)

Plant-based diet

- **Improves RA symptoms,** possibly by reduction of immuno-reactivity to food antigens (10)
- Remarkable **decrease in swollen and tender joints**, pain, erythrocyte sedimentation rate (a marker of inflammation), and C-reactive protein (C-RP) (6)
- **Improves** joint function (11)
- **Decrease in DAS28** Disease Activity Score (12)
- **Decreases risk of CVD** comorbidity

Microbiome

An unhealthy diet facilitates **gut dysbiosis** with an increased abundance of prevotella copri (P-copri) and trimethylamine N-oxide (TMAO) (13).

P-copri bacteria thrive on choline and carnitine from meat, poultry, fish and eggs.

- Reduces the effectiveness of DMARDs
- Increases inflammation
- Increases risk of CVD comorbidity

Plant-based diet

- Decreases TMAO
- Increases dietary fibre, SCFA
- Increases **microbiome diversity** and balance

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The Scientific Evidence

Epidemiological evidence

- Data from the 2017 NHANES survey (n=8789) found the following correlations with RA: advanced **age**, regular **smoking, obesity, osteoporosis, diabetes**, excess to toxic levels of **supplemental vitamin A** intake, and inadequate copper intake (8).

- A 2004 study looked at dietary risk factors for the development of polyarthritis. People with the highest level of **consumption of red meat** (OR 1.9), meat and **meat products** combined (OR 2.3) and **total protein** (OR 2.9) were at **increased risk** of disease (14).

Plant-based nutrition improves not only the symptoms of RA but also lowers cholesterol, HbA1c, C-reactive protein, BMI and blood pressure.

Walrabenstein et al., 2023

Evidence From RCTs and corresponding meta-analyses

- The Plants For Joints trial compared RA patients eating a whole food plant-based diet to usual care (no dietary change) over sixteen weeks. Those on the **plant-based intervention improved their Disease Activity Score (DAS28) by 26%** (3.90 to 2.88). There was a slight deterioration in the control group (3.78 to 3.79). In addition, those on the intervention **improved metabolic biomarkers such as C-RP, HbA1c, cholesterol, BMI and blood pressure** (12).

- In a small 2001 RCT, **40.5%** of patients randomised to 9 months on a vegan diet free of gluten (n=22) met **ACR20 improvement criteria** (15). This is compared with just one patient (3%) in the non-vegan control group (n=28) (10).

- A 2020 RCT demonstrated significant **decreases in markers of inflammation** with a plant-based diet. Fifty-three healthy omnivores ate either a **vegan diet** (VD) or a mixed diet for 4 weeks. Those on the VD experienced significant reductions in leukocytes, neutrophils, monocytes and platelets (16).

General Recommendations

Eat from a wide variety of whole plant foods:
Maximize the intake of high-quality plant foods such as vegetables, whole grains, legumes, fruits, nuts, seeds, herbs, and spices; your health will benefit from every step towards more whole plant foods.
Eliminate or limit all processed foods, refined carbohydrates, sugar-sweetened foods and beverages., and sugar-sweetened foods and drinks.
Eliminate red and processed meat products such as burgers, sausages, bacon, ham, salami, dried meat, canned meat, and pastrami (17).
Eliminate or limit other animal products such as poultry, fish, eggs, cheese, and dairy.
Make sure to **cover potentially critical nutrients** with a wide variety of plant foods, enriched foods/drinks, or supplements (especially vitamin B12 and vitamin D).

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Disease Specific Recommendations

Limiting **sugar** intake may be important for the management of RA (18).

Omega-3 fats may be beneficial. Plant-based sources are preferable due to potential environmental contamination of seafood sources, and the possible role of TMAO.

Some RA patients may see improvement with the elimination of **gluten** (10).

References

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