

# BIOPHARMA & BIOTHERAPEUTICS

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## Chronic pain cured

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**Introduction:** The Chumash Indians of California have plant medicines that cure chronic pain, including fibromyalgia, whiplash, chronic back pain and bursitis. The medicines relieve chronic pain and stop the pain from returning. However, to cure chronic pain, opioids must be stopped due to opioid induced hyperalgesia. The plant medicines are applied topically, are not addictive, do not cause tolerance and have no reported adverse reactions. California sagebrush, *ARTEMISIA CALIFORNICA*, is made into a liniment that is applied to painful areas of the skin. Black sage, *Salvia mellifera*, is made into a decoction that is used as a foot bath.

**Case reports:** The *S. mellifera* decoction has cured chronic pain in a fibromyalgia patient, a chronic back pain patient and a bursitis patient. The decoction can be used in conjunction with the liniment. The *A. californica* liniment has cured chronic pain in 14 chronic back pain patients, 2 bursitis

patients, 4 patients with tendinitis/bursitis of the knee and one patient with tendinitis/bursitis of the hip. Conclusions: Both the decoction and the liniment contain monoterpenoids that inhibit transient receptor potential cation channels in the skin, down regulate chemokine production in the skin, relieve pain and stop chronic pain. The liniment also contains sesquiterpenes that inhibit and down regulate COX2 in the skin which relieves pain and stops chronic pain.

### Speaker Biography

James D Adams received his PhD from UC San Francisco in 1981 in Pharmacology and Toxicology. His postdoctoral experience was at Baylor College of Medicine in Houston, Texas and the National Institutes of Health in Bethesda, Maryland. He served as a research assistant professor at Washington State University before coming to USC School of Pharmacy in 1987. Dr. Adams has worked on cytochrome P450 metabolism of ketamine, phencyclidine and polycyclic aromatic hydrocarbons in the laboratories of Neal Castagnoli, Anthony Trevor and Don Jerina. Under the direction of Jerry Mitchell, Dr. Adams developed a widely used assay for GSH and GSSG and showed how GSH and GSSG levels change during oxidative stress in many organs.

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