

Gait Improved With Motor-Learning Regimen

BY HEIDI SPLETE
Senior Writer

WASHINGTON — An exercise program designed to overcome neural deficits improved elders' walking more than physical therapy that focused on lower-body muscles did, according to results of a randomized, controlled trial.

Standard physical therapy to build strength, flexibility, balance, and endurance has been shown to improve gait

in older adults, but only modestly, said Jessie Van Swearingen, Ph.D., a physical therapist and rehabilitation specialist at the University of Pittsburgh. So she and her colleagues looked for an option.

"There is evidence that the brain has a significant impact on gait," she said while presenting the study at the annual meeting of the American Geriatrics Society. "Motor-learning" exercises involve goal-oriented stepping and walking.

Dr. Van Swearingen and her colleagues

randomized 25 community-dwelling adults (average age 77 years) with gait problems to each of the interventions, which then took place in small group settings under the supervision of a physical therapist. Each group participated in 40- to 60-minute activity sessions twice a week for 12 weeks. Each session included 20-30 minutes of walking. Three people dropped out of the study for reasons unrelated to either intervention.

The motor-learning group practiced

walking patterns including ovals, spirals, and serpentine paths. As the participants improved, they advanced to more-challenging walking patterns with tighter turns. The group also walked on a treadmill to practice increasing speed.

The study's primary outcome was energy spent walking, measured as the average rate of oxygen consumption during 3 minutes of walking on a treadmill at a self-selected speed. The researchers also tracked the participants' walking speeds and assessed their gait.

After 12 weeks, the 23 adults in the motor-learning group walked using significantly less energy than did the 24 adults in the standard intervention group.

Participants in both groups showed improvements in gait abnormalities and walking speed during the study, but the motor-learning group's average improvements were significantly better than those of the standard group. Neither group reported a difference in perceived exertion after the interventions, compared with what they felt at the study's beginning.

Dr. Van Swearingen stated that she had no relevant financial conflict to disclose. ■

Hydration May Not Help Prevent Pressure Ulcers

SAN DIEGO — Although fluid intake can be safely increased in nursing home residents who have, or are at risk for, pressure ulcers and do not routinely ingest the prescribed amount of fluid, levels of subcutaneous oxygen may remain low, results from a multicenter study showed.

"In the nursing home population, hydration is a serious issue," Nancy A. Stotts, R.N., Ed.D., said at the annual meeting of the Wound Healing Society.

Researchers recorded fluid intake for 5 days in 64 residents of five nursing homes in Northern California. The residents were then randomized to receive, for 5 days, the target amount of fluid prescribed by their physician or the target amount plus 10 mL/kg of body weight, said Dr. Stotts, professor of nursing at the University of California, San Francisco.

Subcutaneous oxygen levels were assessed for 3 days during treatment. The mean age of patients was 79 years. The mean baseline daily fluid intake was 1,374 cc for the group who received prescribed fluid, and 1,707 cc for those who received extra fluid. After treatment, the mean daily fluid intake increased significantly for both groups: to 1,787 cc for the group who received prescribed fluid, and to 2,380 cc for those who received the extra fluid.

The mean level of subcutaneous oxygen, however, was 40 mm Hg for patients in the target prescribed group, and 36 mm Hg for patients in the supplemental fluid group. Subcutaneous oxygen levels less than 45 mm Hg indicate tissue hypoxia, she said. The study was funded by the National Institutes of Health.

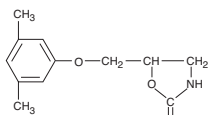
—Doug Brunk

SKELAXIN® (Metaxalone) Tablets

DESCRIPTION

SKELAXIN® (metaxalone) is available as an 800 mg oval, scored pink tablet.

Chemically, metaxalone is 5-[[3,5-dimethylphenoxy]methyl]-2-oxazolidinone. The empirical formula is C₁₇H₁₉NO₂, which corresponds to a molecular weight of 271.34. The structural formula is:



Metaxalone is a white to almost white, odorless crystalline powder freely soluble in chloroform, soluble in methanol and in 96% ethanol, but practically insoluble in ether or water.

Each tablet contains 800 mg metaxalone and the following inactive ingredients: alginate acid, ammonium calcium alginate, B-Rose Liquid, corn starch and magnesium stearate.

CLINICAL PHARMACOLOGY

Mechanism of Action: The mechanism of action of metaxalone in humans has not been established, but may be due to general central nervous system depression. Metaxalone has no direct action on the contractile mechanism of striated muscle, the motor end plate or the nerve fiber.

Pharmacokinetics:

The pharmacokinetics of metaxalone have been evaluated in healthy adult volunteers after single dose administration of SKELAXIN under fasted and fed conditions at doses ranging from 400 mg to 800 mg.

Absorption

Peak plasma concentrations of metaxalone occur approximately 3 hours after a 400 mg oral dose under fasted conditions. Thereafter, metaxalone concentrations decline log-linearly with a terminal half-life of 9.0 ± 4.8 hours. Doubling the dose of SKELAXIN from 400 mg to 800 mg results in a roughly proportional increase in metaxalone exposure as indicated by peak plasma concentrations (C_{max}) and area under the curve (AUC). Dose proportionality at doses above 800 mg has not been studied. The absolute bioavailability of metaxalone is not known.

The single-dose pharmacokinetic parameters of metaxalone in two groups of healthy volunteers are shown in Table 1.

Dose (mg)	C _{max} (ng/mL)	T _{max} (h)	AUC ₀₋₄ (ng·h/mL)	t _{1/2} (h)	CL/F (L/h)
400 ¹	983 (53)	3.3 (35)	7479 (51)	9.0 (53)	68 (50)
800 ²	1816 (43)	3.0 (39)	15044 (46)	8.0 (58)	66 (51)

¹Subjects received 1x400 mg tablet under fasted conditions (N=42)

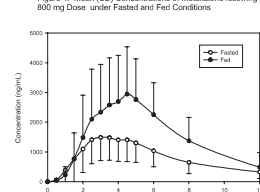
²Subjects received 2x400 mg tablets under fasted conditions (N=59)

Food Effects

A randomized, two-way, crossover study was conducted in 42 healthy volunteers (31 males, 11 females) administered one 400 mg SKELAXIN tablet under fasted conditions and following a standard high-fat breakfast. Subjects ranged in age from 18 to 48 years (mean age = 23.5 ± 5.7 years). Compared to fasted conditions, the presence of a high fat meal at the time of drug administration increased C_{max} by 177.5% and increased AUC (AUC₀₋₄, AUC_{0-∞}) by 123.5% and 115.4%, respectively. Time-to-peak concentration (T_{max}) was also delayed (4.3 h versus 3.3 h) and terminal half-life was decreased (2.4 h versus 9.0 h) under fed conditions compared to fasted.

In a second food effect study of similar design, two 400 mg SKELAXIN tablets (800 mg) were administered to healthy volunteers (N=59, 37 males, 22 females), ranging in age from 18-50 years (mean age = 25.6 ± 8.7 years). Compared to fasted conditions, the presence of a high fat meal at the time of drug administration increased C_{max} by 193.6% and increased AUC (AUC₀₋₄, AUC_{0-∞}) by 146.4% and 142.2%, respectively. Time-to-peak concentration (T_{max}) was also delayed (4.9 h versus 3.0 h) and terminal half-life was decreased (4.2 h versus 8.0 h) under fed conditions compared to fasted conditions. Similar food effect results were observed in the above study when one SKELAXIN 800 mg tablet was administered in place of two SKELAXIN 400 mg tablets. The increase in metaxalone exposure coinciding with a reduction in half-life may be attributed to more complete absorption of metaxalone in the presence of a high fat meal (Figure 1).

Figure 1. Mean (SD) Concentrations of Metaxalone following an 800 mg Dose under Fasted and Fed Conditions



Distribution, Metabolism, and Excretion

Although plasma protein binding and absolute bioavailability of metaxalone are not known, the apparent volume of distribution (V/F ~ 800 L) and lipophilicity (log P = 2.42) of metaxalone suggest that the drug is extensively distributed in the tissues. Metaxalone is metabolized by the liver and excreted in the urine as unidentified metabolites.

Pharmacokinetics in Special Populations

Age: The effects of age on the pharmacokinetics of metaxalone were determined following single administration of two 400 mg tablets (800 mg) under fasted and fed conditions. The results were analyzed separately, as well as in combination with the results from three other studies. Using the combined data, the results indicate that the pharmacokinetics of metaxalone are significantly more affected by age under fasted conditions than under fed conditions, with bioavailability under fasted conditions increasing with age.

The bioavailability of metaxalone under fasted and fed conditions in three groups of healthy volunteers of varying age is shown in Table 2.

Age (years)	Younger Volunteers		Older Volunteers	
	25.6 ± 8.7	39.3 ± 10.8	71.5 ± 5.0	
N	59	21	23	
Food	Fasted	Fed	Fasted	Fed
C _{max} (ng/mL)	1816 (43)	3510 (41)	2719 (46)	2915 (55)
			3168 (43)	3680 (59)

T _{max} (h)	3.0	4.9	3.0	8.7	2.6	6.5
	(39)	(48)	(40)	(91)	(30)	(67)
AUC ₀₋₄ (ng·h/mL)	14531 (47)	20683 (41)	19836 (40)	20482 (37)	23797 (45)	24340 (48)
AUC _{0-∞} (ng·h/mL)	15045 (46)	20833 (41)	20490 (39)	20815 (37)	24194 (44)	24704 (47)

Gender: The effect of gender on the pharmacokinetics of metaxalone was assessed in an open label study, in which 48 healthy adult volunteers (24 males, 24 females) were administered two SKELAXIN 400 mg tablets (800 mg) under fasted conditions. The bioavailability of metaxalone was significantly higher in females compared to males as evidenced by C_{max} (2115 ng/mL versus 1335 ng/mL) and AUC_{0-∞} (17884 ng·h/mL versus 10328 ng·h/mL). The mean half-life was 11.1 hours in females and 7.6 hours in males. The apparent volume of distribution of metaxalone was approximately 22% higher in males than in females, but not significantly different when adjusted for body weight. Similar findings were also seen when the previously described combined dataset was used in the analysis.

Hepatic/Renal Insufficiency: The impact of hepatic and renal disease on the pharmacokinetics of metaxalone has not been determined. In the absence of such information, SKELAXIN should be used with caution in patients with hepatic and/or renal impairment.

INDICATIONS AND USAGE

SKELAXIN (metaxalone) is indicated as an adjunct to rest, physical therapy, and other measures for the relief of discomforts associated with acute, painful musculoskeletal conditions. The mode of action of this drug has not been clearly identified, but may be related to its sedative properties. Metaxalone does not directly relax tense skeletal muscles in man.

CONTRAINDICATIONS

Known hypersensitivity to any components of this product. Known tendency to drug induced, hemolytic, or other anemias. Significantly impaired renal or hepatic function.

WARNINGS

SKELAXIN may enhance the effects of alcohol and other CNS depressants.

PRECAUTIONS

Metaxalone should be administered with great care to patients with pre-existing liver damage. Serial liver function studies should be performed in these patients.

False-positive Benedict's tests, due to an unknown reducing substance, have been noted. A glucose-specific test will differentiate findings.

Taking SKELAXIN with food may enhance general CNS depression; elderly patients may be especially susceptible to this CNS effect. (See CLINICAL PHARMACOLOGY: Pharmacokinetics and PRECAUTIONS: Information for Patients section).

Information for Patients

SKELAXIN may impair mental and/or physical abilities required for performance of hazardous tasks, such as operating machinery or driving a motor vehicle, especially when used with alcohol or other CNS depressants.

Drug Interactions

SKELAXIN may enhance the effects of alcohol, barbiturates and other CNS depressants.

Carcinogenesis, Mutagenesis, Impairment of Fertility

The carcinogenic potential of metaxalone has not been determined.

Pregnancy

Reproduction studies in rats have not revealed evidence of impaired fertility or harm to the fetus due to metaxalone. Post marketing experience has not revealed evidence of fetal injury, but such experience cannot exclude the possibility of infrequent or subtle damage to the human fetus. Safe use of metaxalone has not been established with regard to possible adverse effects upon fetal development. Therefore, metaxalone tablets should not be used in women who are or may become pregnant and particularly during early pregnancy unless in the judgement of the physician the potential benefits outweigh the possible hazards.

Nursing Mothers

It is not known whether this drug is secreted in human milk. As a general rule, nursing should not be undertaken while a patient is on a drug since many drugs are excreted in human milk.

Pediatric Use

Safety and effectiveness in children 12 years of age and below have not been established.

ADVERSE REACTIONS

The most frequent reactions to metaxalone include: CNS: drowsiness, dizziness, headache, and nervousness or "irritability";

Digestive: nausea, vomiting, gastrointestinal upset.

Other adverse reactions are:

Immune System: hypersensitivity reaction, rash with or without pruritus;

Hematologic: leukopenia; hemolytic anemia;

Hepatobiliary: jaundice.

Though rare, anaphylactoid reactions have been reported with metaxalone.

OVERDOSAGE

Deaths by deliberate or accidental overdose have occurred with metaxalone, particularly in combination with antidepressants, and have been reported with this class of drug in combination with alcohol.

When determining the LD₅₀ in rats and mice, progressive sedation, hypnosis and finally respiratory failure were noted as the dosage increased. In dogs, no LD₅₀ could be determined as the higher doses produced an emetic action in 15 to 30 minutes.

Treatment - Gastric lavage and supportive therapy. Consultation with a regional poison control center is recommended.

DOSE AND ADMINISTRATION

The recommended dose for adults and children over 12 years of age is one 800 mg tablet three to four times a day.

HOW SUPPLIED

SKELAXIN (metaxalone) is available as an 800 mg oval, scored pink tablet inscribed with 8667 on the scored side and "S" on the other. Available in bottles of 100 (NDC 60793-136-01) and in bottles of 500 (NDC 60793-136-05).

Store at Controlled Room Temperature, between 15°C and 30°C (59°F and 86°F).

Rx Only

Prescribing Information as of April 2007.



King Pharmaceuticals

Distributed by: King Pharmaceuticals, Inc., Bristol, TN 37620
Manufactured by: Mallinckrodt Inc., Hobart, NY 13788



www.kingpharm.com www.skelaxin.com

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